

Line positions and strengths of N₂O between 3515 and 7800 cm⁻¹

Robert A. Toth

California Institute of Technology

Jet Propulsion Laboratory

mail stop 183/301

Pasadena California 91109

email: toth@caesar.jpl.nasa.gov

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ABSTRACT

The line positions and strengths of N₂O were measured from spectra obtained at high spectral resolution (0.011 cm⁻¹) in the region between 3515 and 7800 cm⁻¹. Measurements include line frequencies and strengths of several N₂O isotopes of which a few are reported for the first time, to my knowledge. Also in this category are two π-π bands, six Δ-Δ bands and five Σ-Σ bands of ¹⁴N₂¹⁶O. Measurements also include 8 ¹⁴N₂¹⁶O bands of which several transitions of each band were perturbed due to resonance interactions with transitions of a perturbing band. For most cases, the positions and strengths of the strongest interacting transitions of the perturbing bands were measured.

1. INTRODUCTION

This study is the sixth in a series of investigations (1-5) by this author involving high resolution measurements of N₂O in the infrared spectral region. In summary, the past studies involved line frequency measurements of bands between 900 and 4700 cm⁻¹ (1,5), line strength measurements and analysis of bands between 900 and 3600 cm⁻¹ (2,4), self-broadened widths and frequency shifts (1800-2360 cm⁻¹) (2), and, in a recent study (3), air- and N₂-broadened widths and pressure-induced frequency shifts in the region between 1800 and 4800 cm⁻¹.

In the present study, N₂O line frequency and strength measurements were obtained for the region between 3515 and 7800 cm⁻¹. Measurements of ¹⁴N₂¹⁶O by Amiot and Guehachvili (6), and of ¹⁴N¹⁵N¹⁶O and ¹⁵N¹⁴N¹⁶O by Amiot (7) were used in this work as an aid in the assignment of the weaker transitions. Reported in this study for the first time, to the author's knowledge, are measurements and assignments of five bands of ¹⁴N₂¹⁸O, two bands of ¹⁴N₂¹⁷O, six "hot" bands of ¹⁴N₂¹⁶O involving the 0220 lower vibrational states, two π - π bands and five Σ - Σ bands of ¹⁴N₂¹⁶O located above 6000 cm⁻¹. Also included here are measurements of enhanced transitions in the 0800-0000, 0910-0110, 0621-0110, and 0711-0110 bands of ¹⁴N₂¹⁶O.

The measurements obtained in this work include transitions of several isotopic species of N₂O: ¹⁴N₂¹⁶O (446), ¹⁴N¹⁵N¹⁶O (456), ¹⁵N¹⁴N¹⁶O (546), ¹⁴N₂¹⁸O (448), and ¹⁴N₂¹⁷O (447). The number notations given within parentheses and representing the isotopic species will be

used in this paper to represent the species. The vibrational-state notation used here is $v_1 v_2 \ell V_3 x$ with the upper state given first in the description of the vibrational bands. x pertains to e or f levels with $x=1$ for e levels and $x=2$ for f levels. x is omitted in the description when the bands represent both e and f levels as was shown above for the 0220 states and enhanced "hot" bands.

2. EXPERIMENT

The data were obtained with a Fourier-transform spectrometer (FTS) located in the McMath solar telescope facility at the Kitt Peak National Observatory. A summary of the experimental conditions are given in Table 1 which includes absorption-cell lengths, sample pressures, spectral range of runs, and approximate values of the signal-to-noise ratios in various spectral regions for each run. A study of the table shows that not all of the available regions for a given run were measured (labeled NA in the table). This was due to weakness of the N_2O transitions and/or low S/N ratio (if higher S/N was available in another run with the same N_2O optical density). The lower portion of the table lists isotopic abundances, vibrational, Q_v , and rotational, Q_r , partition functions for the various isotopic species and these data were applied in the analysis of the line strengths.

A 6-m base-length multiple-transversal cell was used for the 25, 97, and 433 path-length runs whereas a straight cell was used for the other two runs. The gas samples were 99.9% pure N_2O purchased from the Matheson Corp. and the N_2O isotopic-abundance

values were stated to be normal. During the 50-min. or so observation period for each FTS run, the sample pressure and temperature were monitored continuously. The sample pressures were measured with a Baratron MKS gauge with an estimated uncertainty of the pressure readings of 0.5%. Sample temperatures were inferred from readings of one or more thermistor probes in thermal contact with the cell walls and all data were obtained at room temperature, 296 (0.5) K.

The co-added interferograms for each run were transformed into spectral data at the Kitt Peak facility and the analyses of the data were done at JPL using two computer programs. These programs have been applied in several past studies by the author and used in the previous N₂O investigations (1-5). Briefly, two computer programs were used. One, labeled "linefinder" determines absorption peak heights and line frequencies and the other uses the technique of nonlinear least-squares (NLLS) for measuring line frequencies, strengths and linewidths in an interactive mode on the computer. The most accurate results were obtained using the NLLS program especially when an accurate representation of the input parameters were included. In several spectral regions, previously unknown N₂O absorptions were observed and a pre-analysis of the spectra using the "linefinder" program (and further analysis) provided the necessary data to obtain a more complete compilation of N₂O frequencies and strengths which, in turn, were included in the input list to the NLLS program. Also, in the regions where H₂O absorptions were observed in the spectra (3500-4100 cm⁻¹, 5050-5650

cm^{-1} and $6700\text{-}7300 \text{ cm}^{-1}$) H_2O parameters (8) were included in the input list. The broad H_2O features were due to room air of which the IR radiation from the source traveled through before entering the vacuum tank which enclosed the FTS. The vacuum tank contained a small amount of residue water vapor ($200 \mu\text{m}$ total pressure) and the parameters for these narrow absorptions, observed on-top the broad counterparts, were also included in the input list.

The measured line centers obtained by the computer algorithms were slightly off-set and these results were corrected by comparison to known N_2O and CO frequencies. The off-set from FTS spectra can be expressed by a ratio, $C = v(\text{calc.})/v(\text{obs.})$ where $v(\text{calc.})$ is the known (calculated) frequency and $v(\text{obs.})$ is the observed frequency of a spectral absorption. N_2O transition frequencies computed from parameters given in Ref. 1 for the region below 3500 cm^{-1} were used in this procedure. A further check was done by using the very accurate (uncertainties $< 1 \times 10^{-5} \text{ cm}^{-1}$) transitions of the 2-0 band ($4175\text{-}4323 \text{ cm}^{-1}$) of CO given by Pollock et al. (9). The spectral run denoted by an asterisk in Table 1 was used in this procedure. The NLLS CO results obtained from this run gave a value of $C=1.000000493(6)$ which agrees, to high order, to the value of C derived from N_2O measurements and computed frequencies below 3500 cm^{-1} for this run. The value of the uncertainty in C and given above within parentheses is the uncertainty in the CO measurements for that run and this translates into an uncertainty in the line center measurements of $3 \times 10^{-5} \text{ cm}^{-1}$ which represents the absolute uncertainty of the line center

measurements obtained in this study.

3. LINE FREQUENCIES

Effective parameters were applied in the analysis of the line frequencies and for either the upper or lower state of a vibrational band, the parameters can be expressed by (1):

$$\begin{aligned} E_R &= BX - DX^2 + HX^3 + LX^4 \\ E_{VR} &= G + E_R \\ X &= J(J+1), \end{aligned} \quad (1)$$

where E_R represents the rotational energy and G is the effective vibrational energy. Transition frequencies, $\nu(J'' \rightarrow J')$, are given in this representation as:

$$\begin{aligned} \nu(J'' \rightarrow J') &= \nu_o + E_R' - E_R'' \\ \text{where } \nu_o &= G' - G'', \end{aligned} \quad (2)$$

where prime and double prime denote upper and lower states, respectively, and ν_o is the band center. The experimental line frequencies of a band were fitted by least-squares to the expressions given in eqs. 1 and 2 to obtain ν_o , G' , and the parameters of E_R' using known lower-state constants for $G''(1)$ and computed values of $E_R''(1)$. In some cases, these results produced more than one set of constants for a given upper vibrational state and for these cases the best set was chosen. The best set was

determined by accuracy of measurements and strengths of transitions. For example, the measurements of the 0112-0110 band of $^{14}\text{N}_2^{16}\text{O}$ were chosen over those of the 0112-0000 bands in the determination of the constants for the 01121 and 01122 vibrational states.

Values of the effective parameters obtained in this study are given in Table 2. The estimated uncertainties are given in parentheses and reflect the uncertainty, δ , in the last digits of the respective values and the values of G and δG represent the precision of the measurements and not the absolute accuracy. The first 17 entries in the table are constants taken from ref. 1 and were used here to determine the lower state computed energy levels. The earlier study (1) also includes measurements and analysis of the 00021-00001 and 12011-00001 bands of $^{14}\text{N}_2^{16}\text{O}$ with center frequencies located at 4417.378 and 4630.161 cm^{-1} , respectively. However, the results for those bands given in ref. 1 resulted from "linefinder" measurements and the results given in Table 2 for those states were derived from the present study using measurements from the NLLS program which was the situation for all results presented here.

The entries given in Table 2 do not include all of the upper states involved in the measurements in this work. The parameters of the 1111 and 0311 states of $^{14}\text{N}_2^{16}\text{O}$ were derived from the 0311-0110 and 1111-0110 bands and given in the earlier report (1) and these constants were found to be superior to those obtained from the 1111-0000 and 0311-0000 bands measured here and therefore

entries for these states are omitted in Table 2.

A few of the $^{14}\text{N}_2^{16}\text{O}$ vibrational states given in Table 2 are denoted with an asterisk which represents that some of the levels of those states are strongly perturbed due to resonance interactions with levels of perturbing states. The perturbed rotational levels were not included in the least-squares analysis. Also, labeled with a w, are states and constants previously not reported.

4. LINE STRENGTHS

The strength, S , of an infrared absorption line at frequency ν can be expressed by:

$$S = S_v (\nu / \nu_o) \exp(-E_R'' / kT) L [1 - \exp(-\nu / kT)] F / Q_R, \quad (3)$$

where S_v is the vibrational band strength, L is the square of the matrix element of the direction cosines connecting the upper state to the lower state, k is the Boltzmann constant, T is the temperature and F is the F-factor. Q_R and Q_v values are given in the lower portion of Table 1 and Q_v is included in the expression for S_v :

$$S_v = 3056g|R|^2\nu_o \exp(-1.4388G''/T) / (TQ_v), \quad (4)$$

where ν_o and G'' are in cm^{-1} , T in Kelvin, the rotationless dipole moment function, $|R|$ in Debye, and S_v in $\text{cm}^{-2}/\text{atm}$. g represents the

isotopic abundance of the N₂O species and values for them, given in percent, are presented in the lower portion of Table 1. Expressions for L for linear triatomic molecules (given in eq. 3) have been presented in ref. 2. The expressions used in the earlier study (2) and also used here for F are:

$$F = [1 + a_1 m + a_2 J' (J'+1)]^2 \times F'$$

$$F' = 1 \text{ for } \Delta\ell = 0, \pm 1$$

$$\text{and } F' = [J' (J'+1)]^2 \quad \Delta\ell = 2, \quad (5)$$

where $m=0$ for $\Delta J=0$, $m=J'$ for $\Delta J=1$, and $m=-J''$ for $\Delta J=-1$.

The experimental strengths were fitted by least-squares to the expressions given in eqs. (3-5) following the procedure given in ref. 2. The results from the analysis are listed in Table 3. The table gives the vibrational band strength, S_v , rotationless dipole moment function, $|R|$, coefficients of the F-factor, a_1 and a_2 , and conditions of the individual fits: number of lines fitted, extent of the measurements and the standard deviation in percent, $\sigma\%$. $\sigma\%$ is expressed by:

$$\sigma\% = \{\sum_N [S(\text{obs.}) - S(\text{calc.})/S(\text{obs.})]^2/N\}^{1/2}, \quad (6)$$

where $S(\text{obs.})$ and $S(\text{calc.})$ are the observed and calculated line strengths and N is the number of lines included in the individual fits. Also included in Table 3 and given in the last two columns are conditions from the fits of the line-frequency analyses in

which σ is given as:

$$\sigma = \{\sum_N [v(\text{obs.}) - v(\text{calc.})]^2 / N\}^{1/2}. \quad (7)$$

A study of Table 3 shows that not all bands have entries for the frequency conditions which means that these bands were not used in the analysis to obtain the upper state frequency parameters. The reasons for the omission of these bands was stated in the last section.

Several bands listed in Table 3 do not include F-factor coefficients: a_1 and a_2 or a_2 for P- and R-branch bands and a_2 for Q-branch results. This implies that those coefficients were of no significant importance due to the limited range of lines used and/or the inaccuracy of the line strength measurements included in the analysis.

The analysis of a few bands required special attention and these bands are denoted by an asterisk placed before the isotopic species in Table 3. Several of the lines of any of these bands are strongly perturbed due to resonance interactions of the upper state levels with those of the upper state levels of a perturbing band. The lines affected by strong perturbations were not included in the various analyses. Also in the table, a w represents previously unassigned bands.

5. RESULTS

Table 4 lists observed and computed line positions and

strengths of $^{14}\text{N}_2^{16}\text{O}$ perturbed bands measured in this work. The table gives observed positions, observed minus computed, o-c, positions, line assignments, observed strength, estimated uncertainties in the measured strength in percent, s%, computed strength, observed minus computed strength, (o-c)%, and band and molecule notation. The computed positions and strengths were derived from the constants given in Tables 2 and 3, respectively. The perturbed lines are represented by an asterisk placed before the observed position. In many cases, measurements were obtained for transitions of the perturbing bands and the computed frequencies and strengths were based on the same constants used for the main band: for example, note the entries for the R50 line of the 08001-00001 band (perturbing band) located at $4661.43711\text{ cm}^{-1}$. No attempt was made in this study to analyze the perturbed lines in terms of perturbation theory as was done in ref. 2 for the perturbed N_2O transitions observed below 3515 cm^{-1} .

Figures 1-11 display several of the strongest perturbed transitions listed in Table 4 from the spectrum recorded with a 433-m path and 1-Torr sample pressure which covers the region between 3000 and 8000 cm^{-1} . The perturbed lines are denoted by a symbol: O for transitions of the main band and Δ for lines of the perturbing band.

One of the needs in infrared spectroscopy are reference data containing accurately determined positions that can be used as frequency calibration standards for the higher spectral region. The N_2O lines listed in Table 5 should fill this need for the

region between 3676 and 7796 cm^{-1} . The table lists 862 observed lines of ten unperturbed $^{14}\text{N}_2^{16}\text{O}$ $\Sigma-\Sigma$ bands of which the list was limited to transitions with $|o-c| \leq 0.00015 \text{ cm}^{-1}$. The format for the table is the same as that presented in Table 4.

6. DISCUSSION

The line positions and strengths of over 160 bands of N_2O were measured and analyzed and, due to the enormous space required to show all of the results, only a select number are presented. Table 4 lists measurements and computed values of perturbed bands and includes observed line positions and strengths of the perturbing partners. Table 5 gives 862 measurements and computed values of ten $\Sigma-\Sigma$ bands of $^{14}\text{N}_2^{16}\text{O}$ which can be used for purposes of frequency calibration. The study includes previously unassigned transitions of five bands of $^{14}\text{N}_2^{18}\text{O}$, two bands of $^{14}\text{N}_2^{17}\text{O}$, and several "hot" and $\Sigma-\Sigma$ bands of $^{14}\text{N}_2^{16}\text{O}$.

7. ACKNOWLEDGEMENTS

The author wishes to thank the Kitt Peak National Observatory for the use of the FTS and C. Plymate for assistance in obtaining the N_2O spectra. The research described in this paper was performed at the Jet Propulsion Laboratory, California Institute of Technology, under contract with The National Aeronautics and Space Administration.

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FIGURE CAPTIONS

Figures 1-11. Several perturbed $^{14}\text{N}_2\text{O}$ transitions are displayed showing unapodized features of the spectrum recorded with a 433-m path length and a 1-Torr sample pressure.

Figure 1. Perturbed transitions are the P52 lines of the 12011-00001 (O) and 08001-00001 (Δ) bands

Figure 2. Perturbed transitions are the R50 lines of the 12011-00001 (O) and 08001-00001 (Δ) bands

Figure 3. Perturbed transitions are the P49 lines of the 13111-01101 (O) and 09101-01101 (Δ) bands

Figure 4. Perturbed transitions are the R47 lines of the 13111-01101 (O) and 09101-01101 (Δ) bands

Figure 5. Perturbed transitions are the P13 and P14 lines of the 33101-01101 (O) and 06211-01101 (Δ) bands

Figure 6. Perturbed transitions are the R11 and R12 lines of the 33101-01101 (O) and 06211-01101 (Δ) bands

Figure 7. Perturbed transitions are the P17 to P21 lines of the 33102-01102 (O) and 06212-01102 (Δ) bands

Figure 8. Perturbed transitions are the R15 to R19 lines of the 33102-01102 (O) and 06212-01102 (Δ) bands

Figure 9. Perturbed transitions are the P27 lines of the 11121-01101 (O) and 07111-01101 (Δ) bands. The broad spectral feature was due to the H_2O content in the room air.

Figure 10. Perturbed transitions are the R25 lines of the 11121-

01101 (O) and 07111-01101 (Δ) bands

Figure 11. Perturbed transitions are the R28 lines of the 11122-
01102 (O) and 07112-01102 (Δ) bands

Table 1. Summary of experimental conditions^a

path (m)	pressure (Torr)	spectral coverage (cm ⁻¹)	approximate S/N averages spectral regions in cm ⁻¹			
			3500- 5000 5000	5000- 6000 6000	6000- 7000 7000	7000- 8000 8000
1.5	1.01	1800-5600	1000	NA	NA	NA
1.5	10.0	1800-5600	1000	NA	NA	NA
25	1.02	1800-5600	1000	NA	NA	NA
97	1.02	1800-5600	750	NA	NA	NA
433	1.00	1800-5600	400	NA	NA	NA
25	1.02	3000-8000	1000	1000	1000	NA
97	1.02	3000-8000	750	750	500	NA
433	1.00	3000-8000	400	400	250	150
*25	0.74	1800-5600	1000	NA	NA	NA

Isotopic abundances, vibrational Q_v and rotational Q_R partition functions at 296K for N₂O

molecule	% abundance	Q _v	Q _R
446	99.02	1.127	491
456	0.365	1.136	491
546	0.365	1.130	508
448	0.204	1.131	520
447	0.037	1.129	506

^aunapodized spectral resolution was 0.011 cm⁻¹ and sample temperatures was 296K for all runs
NA denotes "not applied" due to weakness of the N₂O transitions or low S/N
the asterisk, *, represents the spectral run obtained with a mixture of N₂O and CO and was used for frequency calibration.

Table 2. N₂O effective vibration-rotation constants (cm⁻¹)

mol	state	G	B	D × 10 ⁷	H × 10 ¹³	L × 10 ¹⁸
446	00001	0.0	0.419011001	1.7609193	-0.16529	
446	01101	588.76787(1)	0.419177925	1.783245	-0.1714	
446	01102	588.76787(1)	0.419969845	1.793030	-0.1766	
446	02001	1168.13230(1)	0.419920952	2.491945	29.55393	
446	02201	1177.74467(2)	0.420125256	1.196792	-29.50211	-26.334
446	02202	1177.74467(2)	0.420126260	1.18180	0.95	-10.5
446	10001	1284.90334(1)	0.417255210	1.726978	1.46666	1.8527
456	00001	0.0	0.418981810	1.763264		
456	01101	575.43365(20)	0.419108916	1.785826		
456	01102	575.43365(20)	0.419918641	1.794459		
546	00001	0.0	0.404857965	1.642938	1.8666	
546	01101	585.31212(10)	0.405037265	1.656798		
546	01102	585.31212(10)	0.405781109	1.667421		
448	00001	0.0	0.395577895	1.583456		
448	01101	584.22466(5)	0.395759697	1.60023		
448	01102	584.22466(5)	0.396471172	1.610773		
447	00001	0.0	0.406672154	1.663972		
448 w	14001	3555.67713(25)	0.395078433(1267)	2.708(324)	-1.35(201)E+01	
546	14001	3589.92834(107)	0.404645809(1223)	3.19043(618)	6.38(122)E+01	
446	14001	3620.94311(2)	0.418779733(292)	3.73344(332)	6.032(479)E+01	2.120(147)E+03
448 w	22001	3661.02369(16)	0.392827309(87)	2.01531(217)	1.8888(645)E+01	
456	22001	3709.81275(27)	0.416264779(252)	2.76743(287)	7.042(114)E+01	
546	22001	3712.12854(17)	0.402333302(54)	2.1485626(890)	1.7688(96)E+01	
448 w	30001	3735.37364(20)	0.392175361(352)	0.88540(608)	1.701(204)E+01	
446	22001	3748.25171(5)	0.416330649(73)	2.38730(102)	2.4558(437)E+01	-4.017(480)E+01
447 w	30001	3781.64788(144)	0.402504682(8500)	1.125(134)		
546	30001	3795.45089(21)	0.400640839(276)	1.22924(425)	1.783(144)E+01	
456	30001	3816.47539(15)	0.413525995(482)	1.68017(827)	1.250(253)E+01	
446	30001	3836.37104(4)	0.414158818(25)	1.425685(453)	1.1525(235)E+01	7.801(288)E+01
446	15102	4197.96374(16)	0.420255166(271)	2.70969(320)	-1.0018(779)E+01	
446	15101	4197.96385(23)	0.417939709(439)	2.57965(454)	4.021(111)E+01	
456	23101	4283.96194(43)	0.415723720(4282)	0.6090(641)	-1.4363(64)E+03	
456	23102	4283.96667(50)	0.417494404(5000)	0.14469(120)	-1.5843(70)E+03	
546	23101	4296.71503(23)	0.40207524(1433)	3.033(356)	7.92(234)E+02	
546	23102	4296.71974(74)	0.403676253(5457)	2.090(193)	1.09(132)E+02	
456	00021	4326.61717(5)	0.412317083(77)	1.748183(150)		
446	23102	4335.79960(7)	0.417682041(53)	2.105275(430)	3.279(161)E+00	
446	23101	4335.79969(11)	0.415924084(177)	2.06084(174)	9.120(334)E+00	
546	00021	4373.60609(8)	0.398130258(72)	1.630547(730)		
448 w	00021	4403.02759(4)	0.389117140(47)	1.5809748(151)		
546	31101	4404.83789(45)	0.400795308(2203)	1.3307(646)	-8.63(399)E+01	
546	31102	4404.84004(86)	0.402089120(2475)	0.8771(584)	-1.745(278)E+02	
456	31102	4406.12709(85)	0.414864194(3733)	1.7352(777)	9.71(473)E+01	
456	31101	4406.13044(81)	0.41371590(1737)	2.003(418)	1.38(271)E+02	
447 w	00021	4409.92857(48)	0.399996168(151)	1.62502(213)		
446	00021	4417.37776(1)	0.412100231(6)	1.7497349(243)		
446	31102	4446.38249(6)	0.415670810(8)	1.366574(526)	1.1387(472)E+01	1.682(898)E+01
446	31101	4446.38251(9)	0.414362431(87)	1.559105(649)	4.6854(132)E+00	4.688(336)E+01
446	04011	4491.54212(11)	0.417319682(470)	3.94460(929)	1.2536(499)E+02	7.148(778)E+02
456	12011	4556.76685(65)	0.414835533(1288)	2.6327(233)		
448 w	12011	4572.49047(62)	0.391392033(1615)	1.9750(471)	-2.63(355)E+01	
546	12011	4585.67001(60)	0.400763545(1305)	2.22252(233)	5.09(121)E+01	
*446	12011	4630.16115(2)	0.414761758(28)	2.405560(505)	2.1234(505)E+01	5.309(885)E+01
448 w	20011	4650.54282(36)	0.389683143(132)	1.23299(325)	9.33(211)E+00	
456	20011	4677.79785(5)	0.411950301(410)	1.68900(446)	-7.71(113)E+00	
546	20011	4679.91818(4)	0.398417775(143)	1.462792(394)	9.6467(611)E+00	
446	20011	4730.82505(1)	0.412118560(6)	1.620142(194)	5.266(103)E+00	1.736(151)E+01
446	16001	4767.14211(32)	0.412975157(708)	5.93740(438)	3.1532(558)E+02	1.458(293)E+02
456	01122	4875.06565(34)	0.413312999(394)	1.79663(251)		
456	01121	4875.06578(39)	0.412533725(51)	1.787208(920)		
446	24001	4910.99555(1)	0.416899659(364)	3.60335(754)	8.175(509)E+01	3.790(981)E+02
446 w	24201	4924.58806(14)	0.417318880(513)	0.51402(494)	-9.177(128)E+01	
446 w	24202	4924.58878(14)	0.417322105(388)	2.10024(129)	1.7108(85)E+01	
546	32001	4976.64973(40)	0.400489130(827)	2.02117(504)		
446	01122	4977.69769(2)	0.413119986(64)	1.784099(159)		
446	01121	4977.69774(5)	0.412356289(8)	1.7704575(144)		
456	32001	4979.70261(75)	0.414391046(3167)	2.4745(530)		

Table 2. continued

mol	state	G	B	D × 10 ⁷	H × 10 ¹³	L × 10 ¹⁸
446	32001	5026.30292(1)	0.414404152(144)	2.34936(244)	2.752(125)E+01	-6.20(171)E+01
446 w	32202	5052.10690(20)	0.415705856(631)	1.69266(842)	1.2799(360)E+02	2.4403(462)E+03
446 w	32201	5052.10797(19)	0.415694046(121)	1.2437368(850)	-3.9228(13)E+01	
446 w	05111	5053.58639(87)	0.416632363(2919)	2.6953(432)	9.12(183)E+01	
446 w	05112	5053.58719(36)	0.418752363(1335)	2.6811(344)	-5.60(210)E+01	
546	40001	5054.90941(67)	0.399864710(608)	0.76954(660)		
456	40001	5073.06705(70)	0.411861029(294)	1.49116(471)		
446	40001	5105.67692(1)	0.413053603(132)	1.04909(262)	2.833(156)E+01	1.232(250)E+02
*446	13112	5200.78110(19)	0.416009836(899)	2.1269(161)	-9.71(995)E+00	3.43(212)E+02
*446	13111	5200.78129(14)	0.414433931(118)	2.01572(230)	-3.8434(414)E+01	1.0223(78)E+03
446	21112	5319.17369(2)	0.413472279(155)	1.56894(164)	7.278(425)E+00	
446	21111	5319.17374(6)	0.412431907(45)	1.658197(694)	3.312(166)E+00	
446	25102	5489.62162(48)	0.418449192(915)	2.7128(113)	1.8660(651)E+01	
446	25101	5489.62186(47)	0.415979521(1020)	2.5276(164)	2.685(613)E+01	
446	02021	5529.69497(24)	0.413164931(631)	2.49087(752)	3.110(213)E+01	
446	02221	5538.43721(6)	0.413365633(1807)	1.1543(125)	-3.783(223)E+01	
446	02222	5538.43748(22)	0.413367270(1489)	1.7977(104)	-2.26(218)E+00	
*446	33101	5617.76841(54)	0.414080525(1542)	1.7863(222)	-1.534(128)E+02	4.939(264)E+03
*446	33102	5617.76978(29)	0.415984177(327)	1.71365(327)	-1.3980(53)E+02	2.5453(571)E+03
446	10021	5646.74019(2)	0.410308009(47)	1.711981(593)	1.920(278)E+00	
446	41102	5722.82366(12)	0.414679182(442)	1.06972(920)	2.439(544)E+01	1.67(107)E+02
446	41101	5722.82375(13)	0.413044803(81)	1.378906(169)	-4.27(211)E+00	5.396(806)E+02
446	14011	5762.37267(18)	0.415474313(117)	3.70845(107)	1.0196(42)E+02	
446 w	14212	5772.62317(66)	0.415735318(436)	2.13019(497)	2.282(667)E+01	
446 w	14211	5772.62356(70)	0.415730293(1785)	0.3235(253)	-1.339(101)E+02	
446	22011	5888.10587(4)	0.412930176(37)	2.372173(824)	2.2174(181)E+01	
446 w	22211	5905.41116(14)	0.413681527(1840)	1.2674(151)	-1.295(342)E+01	
446 w	22212	5905.41125(38)	0.413682268(453)	1.69191(880)	2.254(296)E+01	
546	30011	5911.94814(24)	0.397242056(7726)	1.061(116)		
456	30011	5914.70926(196)	0.410158758(1469)	1.4536(710)		
446	30011	5974.84507(7)	0.410671277(159)	1.36457(199)	-2.59(104)E+00	3.964(133)E+02
446 w	26001	6058.66749(8)	0.417311176(6054)	5.6515(894)	2.982(431)E+02	
446	34001	6192.27059(26)	0.414930148(323)	3.46740(291)	8.9075(202)E+01	
446 w	34201	6210.21148(78)	0.415645463(4507)	1.056(192)	4.43(234)E+02	
*446	11122	6213.81669(39)	0.411490477(741)	1.71146(548)	4.190(575)E+00	
*446	11121	6213.81722(20)	0.410624485(3613)	1.7123(368)	1.51(100)E+00	
446	42001	6295.44763(10)	0.412409340(36)	2.159055(387)	4.0865(269)E+01	
446 w	42202	6333.51726(95)	0.414486096(1830)	1.1561(605)	-8.41(517)E+01	
446 w	42201	6333.51742(64)	0.414483895(1397)	1.1483(522)	-2.275(871)E+02	
446	50001	6373.30771(23)	0.412345251(455)	0.52619(587)	5.163(182)E+01	
446	23112	6462.06892(42)	0.414318604(926)	2.2639(166)	5.722(743)E+01	
446	23111	6462.06958(63)	0.412610652(1996)	2.0405(304)	-1.73(104)E+01	
446	31111	6570.76817(24)	0.410970427(207)	1.51175(489)	4.08(167)E+00	
446	31112	6570.76824(48)	0.412236464(1683)	1.3075(228)	6.92(687)E+00	
446 w	00031	6580.85370(5)	0.408635527(6)	1.745407(154)		
446 w	12021	6768.50167(96)	0.411365722(1312)	2.3914(116)	5.052(230)E+01	
446 w	20021	6868.54982(50)	0.408629187(956)	1.6977(187)	5.893(847)E+01	
446 w	01132	7126.97880(14)	0.409689927(155)	1.786734(911)		
446 w	01131	7126.97881(24)	0.408936885(207)	1.76435(154)		
446 w	32011	7137.12706(29)	0.410968484(319)	2.30709(190)		
*446 w	40011	7214.67990(40)	0.409615412(893)	0.90342(811)		
446	10031	7782.66155(31)	0.406826328(358)	1.73206(381)	1.2761(472)E+01	

estimated uncertainties in the last digits are given within parentheses

an asterisk, *, denotes that several of the levels are strongly perturbed and these levels were not included in the least-squares analysis

w represents previously unassigned vibrational states

Table 3. Band strengths S_v , rotationless dipole-moment matrix element $|R|$, and F-factor coefficients of N_2O ^a

mol	band			S_v	$ R $	$a_1 \times 10^4$	$a_2 \times 10^5$	strength fit				freq. no.	fit σ^c
	upper	lower	center					no.	PMAX	RMAX	σ^b		
448 w	14001	00001	3555.67713	8.30(32)E-04	3.55(7)E-03	-0.46	2.94	39	33	31	4.7	39	28
446	20011	02001	3562.69271	6.50(32)E-04	2.43(6)E-03	2.11	8.29	39	40	33	6.0		
546	14001	00001	3589.92834	4.61(44)E-04	1.95(9)E-03			23	36	33	9.3	19	54
446	16001	02001	3599.00977	1.37(9)E-03	1.10(4)E-02			41	36	32	6.4		
446	15102	01102	3609.19587	1.05(2)E-02	2.37(2)E-03	2.66	2.74	69	48	54	2.4	69	16
446	15101	01101	3609.19598	1.04(3)E-02	2.35(3)E-03	2.60	3.36	64	53	48	3.1	63	15
446	14001	00001	3620.94311	9.80(19)E-02	1.73(2)E-03	1.05	1.89	95	58	61	2.3	88	7
446	24001	10001	3626.09217	7.18(42)E-04	1.06(3)E-02	20.38		26	32	28	7.0		
446	14201	00001	3631.58972	1.83(13)E-09	2.33(8)E-07			34	52	54	7.0		
448 w	22001	00001	3661.02369	4.12(10)E-03	7.99(10)E-03	1.89	1.04	61	48	47	3.0	66	19
456	23101	01101	3708.52829	1.22(40)E-04	4.01(65)E-03			9	23	24	38.9	7	19
456	23102	01102	3708.53302	1.35(25)E-04	4.22(38)E-03			12	27	19	19.9	10	46
456	22001	00001	3709.81275	1.25(5)E-03	3.20(6)E-03	3.82	0.72	38	40	31	4.6	35	28
546	23101	01101	3711.40291	2.10(36)E-04	5.38(46)E-03			9	30	27	20.9	11	78
546	23102	01102	3711.40762	2.03(38)E-04	5.29(49)E-03			10	28	29	17.4	15	122
546	22001	00001	3712.12854	3.35(10)E-03	5.17(8)E-03	-0.39	3.56	44	50	45	3.7	39	17
448 w	30001	00001	3735.37364	3.03(8)E-03	6.61(9)E-03	1.70	-2.21	32	46	44	3.3	34	17
*446	33101	11101	3737.50263	4.01(23)E-04	1.05(3)E-02			8	22	26	6.1		
*446	33102	11102	3737.50400	3.81(32)E-04	1.02(4)E-02			8	27	26	8.7		
446	25102	03102	3740.55643	3.57(41)E-04	7.20(40)E-03			12	29	34	11.3		
446	25101	03101	3740.55659	3.60(44)E-04	7.23(44)E-03			20	35	36	11.4		
446	32001	10001	3741.39954	7.24(26)E-03	1.04(2)E-02	0.52	3.16	37	50	47	4.4		
446	24001	02001	3742.86321	5.06(15)E-03	6.54(10)E-03			36	37	43	3.1		
446 w	24201	02201	3746.84339	3.24(12)E-03	5.41(10)E-03	5.25	3.63	38	43	47	4.5	36	25
446 w	24202	02202	3746.84411	3.22(12)E-03	5.39(10)E-03	-.36	3.84	41	47	48	4.6	38	27
446	23102	01102	3747.03173	5.59(11)E-02	5.36(5)E-03	1.19	2.07	53	58	69	2.4	67	10
446	23101	01101	3747.03182	5.57(11)E-02	5.35(5)E-03	2.00	2.04	61	58	74	2.4	72	11
446	22001	00001	3748.25171	8.22(18)E-01	4.92(5)E-03	1.27	2.44	102	69	72	2.6	103	11
446	22201	00001	3766.05253	3.08(10)E-09	3.00(5)E-07	3.38	1.27	28	50	58	4.2		
447 w	30001	00001	3781.64788	6.27(45)E-04	7.01(25)E-03			13	12	33	7.0	11	63
546	30001	00001	3795.45089	5.26(19)E-03	6.42(12)E-03	4.46		54	45	46	4.4	50	17
456	30001	00001	3816.47539	6.01(19)E-03	6.93(11)E-03			51	48	41	3.2	51	17
546	31101	01101	3819.52577	2.35(38)E-04	5.61(46)E-03			20	32	23	16.7	15	40
546	31102	01102	3819.52792	2.45(28)E-04	5.72(32)E-03			15	30	33	11.9	11	78
446	40001	10001	3820.77354	1.10(2)E-02	1.28(1)E-02	1.95	-2.30	40	45	47	2.5		
446	00021	01102	3828.60986	1.82(18)E-04	3.03(15)E-04			5	QMAX=27		10.5		
446	00021	01101	3828.60986	2.37(14)E-04	3.42(10)E-04	-152.8	24.08	13	32	26	7.3		
456	31102	01102	3830.69344	2.81(20)E-04	6.00(22)E-03			13	32	26	7.0	15	33
456	31101	01101	3830.69679	3.03(25)E-04	6.23(26)E-03			12	20	26	7.9	11	80
446	30001	00001	3836.37104	1.80(3)E+00	7.20(5)E-03	0.84	-1.55	107	66	72	1.8	105	6
446	41102	11102	3842.55788	5.11(52)E-04	1.16(6)E-02			22	34	36	10.7		
446	41101	11101	3842.55797	5.00(29)E-04	1.16(3)E-02			18	30	28	5.9		
446	31102	01102	3857.61462	8.29(14)E-02	6.44(5)E-03	0.67	-1.48	80	63	61	2.0	74	5
446	31101	01101	3857.61463	8.31(19)E-02	6.45(7)E-03	2.12	-1.29	92	61	60	2.7	85	9
446	32001	02001	3858.17058	3.74(13)E-03	5.59(9)E-03			39	44	46	3.5		
*446	33101	03101	3868.70314	2.04(46)E-04	5.35(60)E-03			16	22	29	23.7		
*446	33102	03102	3868.70459	1.77(16)E-04	4.98(21)E-03			9	30	30	8.8		
446 w	32202	02202	3874.36223	4.04(12)E-03	5.93(9)E-03			54	44	45	3.0	46	23
446 w	32201	02201	3874.36330	4.08(10)E-03	5.96(7)E-03	3.22	-1.75	48	44	49	2.9	49	24
446	03112	00001	3931.24747	6.31(17)E-04	1.33(2)E-04			23	QMAX=23		3.2		
446	03111	00001	3931.24766	6.34(18)E-04	1.33(2)E-04	-43.10	1.30	31	35	26	3.3		
446	40001	02001	3937.54458	3.67(13)E-04	1.73(3)E-03	2.14	2.90	36	30	32	4.1		
*446	13112	02001	4032.64876	1.00(18)E-04	8.95(70)E-04			6	QMAX=22		20.7		
*446	13111	02001	4032.64895	1.23(16)E-04	9.93(66)E-04			8	23	18	14.1		
*446	12011	01102	4041.39324	5.53(16)E-04	5.14(8)E-04			-0.62	22	QMAX=32	3.6		
*446	12011	01101	4041.39324	5.67(19)E-04	5.20(9)E-04	-27.96	8.55	26	31	25	4.0		
446	12211	01101	4053.69433	7.40(20)E-04	5.93(8)E-04	-45.30		34	30	28	3.2		
446	12211	01102	4053.69433	7.42(28)E-04	5.94(11)E-04			0.03	25	QMAX=41	4.5		
446	12212	01102	4053.69435	7.58(23)E-04	6.01(9)E-04	-48.00		32	30	30	3.5		
446	12212	01101	4053.69435	7.61(19)E-04	6.02(7)E-04			0.08	23	QMAX=36	3.0		
*446	11112	00001	4061.97956	1.38(2)E-02	6.13(5)E-04			-0.16	31	QMAX=55	1.8		
*446	11111	00001	4061.97960	1.36(2)E-02	6.07(4)E-04	-45.44	-0.32	71	54	49	1.7		
446	20011	01102	4142.05714	1.86(7)E-04	2.95(6)E-04			0.46	22	QMAX=34	4.7		
446	20011	01101	4142.05714	1.92(9)E-04	2.99(7)E-04	-110.9		18	30	20	5.8		

Table 3. continued

mol	band			S_v	$ R $	$a_1 \times 10^4$	$a_2 \times 10^5$	strength fit			freq.	fit no.	σ^b
	upper	lower	center					no.	PMAX	RMAX			
456	01122	01102	4299.63200	3.38(17)E-04	6.21(15)E-03			27	32	17	5.0	29	39
456	01121	01101	4299.63213	3.31(19)E-04	6.15(17)E-03			33	31	28	5.5	23	34
456	00021	00001	4326.61717	5.13(11)E-03	5.95(7)E-03	-8.18		76	49	43	2.6	24	9
*446	11122	11102	4333.55090	2.88(12)E-04	8.27(17)E-03			19	28	23	4.3		
*446	11121	11101	4333.55143	2.89(13)E-04	8.28(18)E-03			21	28	23	4.5		
446	23102	00001	4335.79960	1.96(5)E-04	7.05(9)E-05	0.76		6	QMAX=30		3.4		
446	23101	00001	4335.79969	1.47(7)E-04	6.12(15)E-05	118.7	33.61	10	15	24	6.1		
446	02221	02201	4360.69254	5.19(19)E-03	6.34(12)E-03			56	47	43	3.6	55	48
446	02222	02202	4360.69281	5.19(19)E-03	6.34(12)E-03			56	47	43	3.6	53	57
446	02021	02001	4361.56267	5.67(21)E-03	6.47(12)E-03			67	47	46	3.6	61	16
446	10021	10001	4361.83680	5.26(15)E-03	8.28(12)E-03			60	47	46	2.9		
546	00021	00001	4373.60609	3.44(8)E-03	4.83(5)E-03	-4.33	0.74	57	47	45	2.7	50	9
446	01122	01102	4388.92982	8.60(13)E-02	6.15(5)E-03	-4.23	0.79	97	62	51	1.8	91	5
446	01121	01101	4388.92987	8.58(20)E-02	6.14(7)E-03	-4.08	0.86	98	62	51	2.8	90	4
446 w	00021	00001	4403.02759	4.05(9)E-03	7.04(8)E-03	-2.58	0.71	65	44	48	2.7	61	6
447 w	00021	00001	4409.92857	6.39(20)E-04	6.56(11)E-03	-8.26	3.39	33	30	34	3.9	33	44
446	00021	00001	4417.37776	1.47(2)E+00	6.05(6)E-03	-4.98	0.36	101	72	66	2.3	101	3
446	31102	00001	4446.38249	3.07(10)E-04	8.73(14)E-05			27	QMAX=34		3.1		
446	31101	00001	4446.38251	3.25(12)E-04	8.98(16)E-05	137.79	3.08	32	4	36	4.3		
446 w	05111	01101	4464.81852	3.21(24)E-04	3.72(14)E-04			32	18	35	7.4	32	38
446 w	05112	01102	4464.81932	3.30(10)E-04	3.77(10)E-04			26	18	31	5.3	38	39
446	04011	00001	4491.54212	2.36(5)E-03	2.41(3)E-04	9.53	4.88	76	46	47	2.7	22	8
456	12011	00001	4556.76685	2.22(22)E-04	1.21(6)E-03			19	25	25	9.7	25	50
448 w	12011	00001	4572.49047	3.37(14)E-04	1.99(4)E-03	3.42		32	34	30	5.3	34	39
546	12011	00001	4585.67001	6.38(20)E-04	2.03(3)E-03	8.17	1.81	37	40	33	3.7	37	35
446	14011	02001	4594.24032	1.01(3)E-03	2.66(4)E-03	6.85		50	41	41	3.4		
446 w	14212	02202	4594.87850	7.04(22)E-04	2.28(4)E-03	4.01		43	35	29	3.8	37	41
446 w	14211	02201	4594.87889	6.96(24)E-04	2.26(4)E-03	6.42	2.12	45	37	35	4.2	38	39
446	22011	10001	4603.20248	6.26(21)E-04	2.78(5)E-03	4.18		40	38	33	4.1		
*446	13112	01102	4612.01323	1.05(2)E-02	2.09(2)E-03	5.09	2.06	86	53	54	2.5	69	9
*446	13111	01101	4612.01342	1.04(2)E-02	2.08(2)E-03	5.73	1.88	81	54	52	2.4	65	20
*446	12011	00001	4630.16115	1.26(2)E-01	1.73(1)E-03	5.57	2.49	105	65	64	1.7	72	5
446	12211	00001	4642.46220	7.02(29)E-10	1.29(3)E-07	-2.78	2.03	25	50	49	5.0		
448 w	20011	00001	4650.54282	1.01(3)E-03	3.42(6)E-03	6.88		51	42	41	3.9	47	36
456	20011	00001	4677.79785	3.09(7)E-03	4.45(5)E-03	2.54		54	45	46	2.8	51	10
546	20011	00001	4679.91818	3.32(8)E-03	4.59(6)E-03	1.76	-1.40	62	45	45	2.9	55	8
446	30011	10001	4689.94168	3.72(10)E-03	6.72(9)E-03	3.59		61	43	44	3.3		
446	22011	02001	4719.97352	2.43(11)E-03	4.07(9)E-03			51	42	43	4.6		
446 w	22211	02201	4727.66649	2.53(6)E-03	4.25(5)E-03	0.08	-2.50	44	44	44	2.6	39	41
446 w	22212	02202	4727.66658	2.52(5)E-03	4.24(4)E-03	0.80	-1.56	47	46	40	2.5	43	35
446	21112	01102	4730.40582	4.78(11)E-02	4.41(5)E-03	2.69	-1.50	78	59	55	2.7	61	7
446	21111	01101	4730.40587	4.78(8)E-02	4.42(4)E-03	2.08	-1.45	85	54	49	2.1	72	5
446	20011	00001	4730.82505	9.05(15)E-01	4.59(4)E-03	1.98	-0.91	96	68	48	2.0	79	1
446	16001	00001	4767.14211	8.87(27)E-04	1.43(2)E-04	9.34		43	8	45	3.6	46	28
446	25102	01102	4900.85375	1.00(3)E-03	6.29(9)E-04	-4.06	2.11	53	39	40	3.3	64	68
446	25101	01101	4900.85399	1.00(4)E-03	6.29(12)E-04	1.38	2.30	49	37	34	4.4	58	37
446	24001	00001	4910.99555	1.07(2)E-02	4.89(4)E-04	3.26	3.24	82	50	43	1.9	84	10
446	02021	01102	4940.92707	2.52(13)E-04	3.14(8)E-04			11	QMAX=36		5.3		
446	02021	01101	4940.92707	2.86(15)E-04	3.35(9)E-04	-15.08		20	30	29	6.2		
446	02221	01101	4949.66931	2.54(12)E-04	3.15(8)E-04	3.56		20	26	27	5.7		
446	02221	01102	4949.66931	2.98(15)E-04	3.34(9)E-04			17	QMAX=34		5.1		
446	02222	01101	4949.66958	2.81(14)E-04	3.31(8)E-04			17	QMAX=36		4.9		
446	02222	01102	4949.66958	2.84(12)E-04	3.32(7)E-04	-6.32		29	29	32	5.1		
546	32001	00001	4976.64973	2.35(12)E-04	1.18(3)E-03			24	28	38	5.1	32	55
446	01122	00001	4977.69766	4.70(10)E-03	3.23(3)E-04			43	QMAX=48		2.0		
446	01121	00001	4977.69771	4.68(12)E-03	3.22(4)E-04	-3.20		71	50	47	3.0		
456	32001	00001	4979.70261	1.03(7)E-04	7.87(27)E-04			7	20	18	6.3	18	87
446	42001	10001	5010.54424	6.30(33)E-04	2.67(7)E-03			42	34	37	5.1		
446	34001	02001	5024.13824	2.92(14)E-04	1.37(3)E-03			29	30	30	4.7		
446	32001	00001	5026.30292	6.04(11)E-02	1.15(1)E-03	3.00	2.21	93	60	57	2.1	90	8
*446	33101	01101	5029.00054	3.43(7)E-03	1.15(1)E-03	2.52	2.10	66	45	46	2.5	37	21
*446	33102	01102	5029.00191	3.41(8)E-03	1.14(1)E-03	1.21	1.80	55	48	47	3.0	32	28
446 w	34201	02201	5032.46681	1.81(10)E-04	1.10(10)E-03			21	20	15	5.7	24	43
446 w	34202	02202	5032.46677	1.81(10)E-04	1.10(10)E-03			21	20	15	5.7		
546	40001	00001	5054.90941	1.58(10)E-04	9.64(29)E-04			14	30	21	6.1	21	57
456	40001	00001	5073.06705	2.54(11)E-04	1.22(3)E-03	14.32	-6.01	31	26	29	5.1	36	56

Table 3. continued

mol	band			S_v	R	$a_1 \times 10^4$	$a_2 \times 10^{-5}$	strength fit				freq. fit	
	upper	lower	center					no.	PMAX	RMAX	$\sigma\%$ ^b	no.	$\sigma\%$ ^c
446	50001	10001	5088.40432	4.01(15)E-04	2.12(4)E-03	3.56	-3.85	42	30	36	4.6		
446	40001	00001	5105.67692	6.28(11)E-02	1.17(10)E-03	3.06	-3.04	106	56	59	2.1	103	6
446	42001	02001	5127.31528	1.10(15)E-04	8.30(56)E-04			16	19	23	13.7		
446	41102	01102	5134.05579	2.82(6)E-03	1.03(1)E-03	2.04	-1.96	73	43	46	2.5	64	13
446	41101	01101	5134.05588	2.84(6)E-03	1.03(1)E-03	4.04	-2.20	76	43	45	2.4	74	16
446 w	42202	02202	5155.77259	1.33(7)E-04	9.33(26)E-04			26	18	27	5.5	33	71
446 w	42201	02201	5155.77275	1.36(11)E-04	9.45(37)E-04			28	17	27	7.3	32	86
446	02021	00001	5529.69494	1.07(3)E-03	1.46(2)E-04	-1.67	5.34	64	42	44	3.3		
456	10021	00001	5555.64600	8.92(90)E-05	6.93(35)E-04			10	16	27	9.9		
446	20021	10001	5583.64643	2.05(14)E-04	1.45(5)E-03	-1.17		31	28	29	8.2		
446	12021	02001	5600.36932	9.36(136)E-05	7.34(53)E-04			21	27	26	14.0		
*446	11122	01102	5625.04882	1.22(3)E-03	6.47(7)E-04	-5.46		58	38	40	2.5	24	25
*446	11121	01101	5625.04935	1.23(3)E-03	6.48(8)E-04	-6.50		56	38	35	3.1	28	40
446	10021	00001	5646.74019	2.15(3)E-02	6.48(5)E-04	-4.88		85	57	34	1.8	83	6
446	14011	00001	5762.37267	5.57(17)E-04	1.03(2)E-04	4.14	6.02	62	39	34	3.7	58	18
446	23112	01102	5873.30105	5.78(17)E-04	4.36(6)E-04	8.74		49	32	37	3.5	54	28
446	23111	01101	5873.30171	5.71(19)E-04	4.33(7)E-04	5.08		55	33	41	4.0	62	43
446	22011	00001	5888.10587	8.08(15)E-03	3.89(4)E-04	4.81	2.02	99	53	52	2.2	96	8
546	30011	00001	5911.94814	9.08(130)E-05	6.75(49)E-04			16	27	23	14.6	16	104
456	30011	00001	5914.70926	8.48(148)E-05	6.54(57)E-04			16	23	17	19.5	17	145
*446	40011	10001	5929.77650	1.00(7)E-04	9.80(34)E-04			18	25	23	7.1		
446	32011	02001	5968.99470	5.21(99)E-05	5.30(51)E-04			7	20	23	23.1		
446	30011	00001	5974.84507	2.20(4)E-02	6.38(6)E-04	4.91	-2.12	95	55	55	2.2	97	18
446	31111	01101	5982.00030	1.05(3)E-03	5.83(8)E-04	3.92	-1.78	58	40	39	3.2	56	26
446	31112	01102	5982.00037	1.05(3)E-03	5.81(7)E-04	2.27	-1.17	55	38	40	3.0	51	27
446 w	26001	00001	6058.66749	1.25(12)E-04	4.77(23)E-05			31	25	29	10.0	36	90
446	34001	00001	6192.27059	1.06(3)E-03	1.37(2)E-04	3.73	3.65	77	47	45	3.9	80	24
446	42001	00001	6295.44763	3.56(7)E-03	2.50(3)E-04	3.65	1.23	88	50	50	2.4	74	10
446	50001	00001	6373.30771	1.64(3)E-03	1.68(2)E-04	2.63	-3.31	76	42	42	2.5	71	16
446 w	01132	01102	6538.21093	1.77(4)E-03	7.22(8)E-04			65	44	31	2.4	33	16
446 w	01131	01101	6538.21094	1.78(4)E-03	7.24(8)E-04			64	43	31	2.2	34	21
446	00031	00001	6580.85370	2.98(5)E-02	7.06(6)E-04	-2.51		102	58	56	2.0	95	8
446 w	12021	00001	6768.50167	2.28(16)E-04	6.10(21)E-05			24	30	25	7.0	38	66
446 w	20021	00001	6868.54982	7.75(47)E-04	1.12(3)E-04			54	37	34	5.8	59	37
446 w	32011	00001	7137.12706	8.90(46)E-04	1.17(3)E-04			42	33	35	5.1	33	33
*446 w	40011	00001	7214.67990	8.50(40)E-04	1.16(3)E-04			39	37	30	4.5	41	45
446	10031	00001	7782.66155	4.30(13)E-03	2.47(4)E-04	-1.99	-2.47	63	42	44	3.7	50	26

^aCenter in cm^{-1} , S_v in $\text{cm}^{-2}/\text{atm.}$, and $|R|$ in Debyes with measurements taken with N_2O gas samples at 296 K. Values given within parentheses are estimated uncertainties in last digits.

^bThe standard deviation difference in percent between the computed and measured line strengths for a band.

^cThe standard deviation difference between the computed and measured line frequencies $\times 10^5$ in cm^{-1} . Entries include bands used in the least-squares fit to determine the upper state vibration-rotation.

An asterisk, *, denotes that several of the transitions of the band are strongly perturbed. Values for S_v is the unperturbed vibrational band strength and the perturbed lines were not included in deriving the values of $\sigma\%$ and $\sigma(v)$.
w represents previously unassigned and un-analyzed bands

**Table 4. Observed and computed line
positions (cm⁻¹) and strengths (cm⁻²/atm. at 296K)
of N₂O perturbed bands**

observed position	o-c.	line	strength			(o-c) %	band		
			observed	s*	computed		upper	lower	mol
4630.99069	2.	R 0	2.550E-04	2.	2.575E-04	-1.0	12011	00001	446
4631.81169	0.	R 1	5.130E-04	2.	5.138E-04	-1	12011	00001	446
4632.62415	-4.	R 2	7.710E-04	3.	7.656E-04	.7	12011	00001	446
4633.42820	2.	R 3	9.930E-04	2.	1.010E-03	-1.7	12011	00001	446
4634.22364	1.	R 4	1.260E-03	2.	1.244E-03	1.2	12011	00001	446
4635.01055	0.	R 5	1.430E-03	2.	1.466E-03	-2.5	12011	00001	446
4635.78894	4.	R 6	1.650E-03	3.	1.672E-03	-1.3	12011	00001	446
4636.55867	-2.	R 7	1.840E-03	3.	1.861E-03	-1.2	12011	00001	446
4637.31987	-1.	R 8	1.990E-03	3.	2.031E-03	-2.1	12011	00001	446
4638.07249	2.	R 9	2.150E-03	3.	2.181E-03	-1.4	12011	00001	446
4638.81642	-1.	R10	2.250E-03	4.	2.308E-03	-2.6	12011	00001	446
4639.55175	-1.	R11	2.390E-03	3.	2.414E-03	-1.0	12011	00001	446
4640.99635	-1.	R13	2.520E-03	3.	2.557E-03	-1.5	12011	00001	446
4641.70561	1.	R14	2.600E-03	3.	2.594E-03	.2	12011	00001	446
4642.40609	0.	R15	2.590E-03	2.	2.611E-03	-.8	12011	00001	446
4643.09783	1.	R16	2.580E-03	2.	2.606E-03	-1.0	12011	00001	446
4643.78075	1.	R17	2.570E-03	3.	2.583E-03	-.5	12011	00001	446
4644.45485	2.	R18	2.530E-03	2.	2.542E-03	-.5	12011	00001	446
4645.12008	2.	R19	2.480E-03	2.	2.484E-03	-.2	12011	00001	446
4645.77640	1.	R20	2.400E-03	2.	2.412E-03	-.5	12011	00001	446
4646.42376	-3.	R21	2.340E-03	2.	2.328E-03	.5	12011	00001	446
4647.06220	-2.	R22	2.210E-03	2.	2.233E-03	-1.0	12011	00001	446
4647.69165	-1.	R23	2.090E-03	2.	2.129E-03	-1.9	12011	00001	446
4648.31204	-1.	R24	2.010E-03	2.	2.019E-03	-.4	12011	00001	446
4648.92334	-1.	R25	1.900E-03	2.	1.903E-03	-.2	12011	00001	446
4649.52553	-2.	R26	1.790E-03	2.	1.785E-03	.3	12011	00001	446
4650.11857	-1.	R27	1.670E-03	2.	1.665E-03	.3	12011	00001	446
4650.70239	-2.	R28	1.540E-03	2.	1.545E-03	-.3	12011	00001	446
4651.27697	-2.	R29	1.430E-03	2.	1.426E-03	.3	12011	00001	446
4651.84231	2.	R30	1.330E-03	2.	1.309E-03	1.6	12011	00001	446
4652.39829	2.	R31	1.240E-03	2.	1.196E-03	3.5	12011	00001	446
4652.94482	-4.	R32	1.090E-03	2.	1.088E-03	.2	12011	00001	446
4653.48201	-2.	R33	9.960E-04	2.	9.843E-04	1.2	12011	00001	446
4654.00972	-2.	R34	8.910E-04	2.	8.863E-04	.5	12011	00001	446
4654.52794	0.	R35	7.900E-04	2.	7.942E-04	-.5	12011	00001	446
4655.53562	4.	R37	6.370E-04	3.	6.288E-04	1.3	12011	00001	446
*4656.02499	3.	R38	5.480E-04	2.	5.556E-04	-1.4	12011	00001	446
*4656.97471	17.	R40	4.310E-04	2.	4.277E-04	.8	12011	00001	446
*4657.43489	24.	R41	3.770E-04	2.	3.727E-04	1.1	12011	00001	446
*4657.88527	34.	R42	3.260E-04	2.	3.233E-04	.8	12011	00001	446
*4658.32589	59.	R43	2.830E-04	2.	2.792E-04	1.3	12011	00001	446
*4658.75654	80.	R44	2.470E-04	3.	2.401E-04	2.8	12011	00001	446
*4659.17739	121.	R45	2.000E-04	3..	2.055E-04	-2.7	12011	00001	446
*4659.58841	182.	R46	1.780E-04	3.	1.751E-04	1.7	12011	00001	446
*4659.98966	274.	R47	1.480E-04	2.	1.485E-04	-.3	12011	00001	446
*4660.77079	1364.	R49	1.070E-04	2.	1.055E-04	1.4	12011	00001	446
*4661.09854	-2843.	R50	7.980E-05	3.	8.829E-05	-10.6	12011	00001	446
*4661.43711	31014.	R50	6.900E-06	5.	8.830E-05	-1179.7	08001	00001	446
*4661.47823	-830.	R51	7.300E-05	3.	7.360E-05	-.8	12011	00001	446
*4661.83117	-461.	R52	6.080E-05	4.	6.108E-05	-.5	12011	00001	446
*4662.17133	-336.	R53	5.420E-05	10.	5.047E-05	6.9	12011	00001	446
*4662.50054	-268.	R54	4.100E-05	2.	4.153E-05	-1.3	12011	00001	446
*4663.12715	-185.	R56	2.780E-05	5.	2.776E-05	.2	12011	00001	446
4664.25444	-1.	R60	1.230E-05	3.	1.178E-05	4.2	12011	00001	446
4665.21005	-26.	R64	4.480E-06	5.	4.670E-06	-4.2	12011	00001	446
4627.62159	-1.	P 3	7.400E-04	2.	7.502E-04	-1.4	12011	00001	446
4626.75810	0.	P 4	9.800E-04	2.	9.831E-04	-.3	12011	00001	446
4625.88613	1.	P 5	1.200E-03	2.	1.203E-03	-.3	12011	00001	446
4625.00561	-2.	P 6	1.410E-03	2.	1.408E-03	.2	12011	00001	446
4624.11664	-2.	P 7	1.600E-03	3.	1.595E-03	.3	12011	00001	446
4623.21917	0.	P 8	1.750E-03	2.	1.763E-03	-.8	12011	00001	446
4622.31318	-1.	P 9	1.890E-03	3.	1.911E-03	-1.1	12011	00001	446
4621.39870	2.	P10	2.010E-03	2.	2.038E-03	-1.4	12011	00001	446
4620.47564	-1.	P11	2.130E-03	3.	2.143E-03	-.6	12011	00001	446
4619.54408	0.	P12	2.210E-03	3.	2.226E-03	-.7	12011	00001	446
4618.60397	0.	P13	2.260E-03	2.	2.287E-03	-1.2	12011	00001	446
4616.69804	1.	P15	2.340E-03	2.	2.345E-03	-.2	12011	00001	446
4615.73219	1.	P16	2.340E-03	2.	2.344E-03	-.2	12011	00001	446
4614.75771	0.	P17	2.300E-03	2.	2.324E-03	-1.0	12011	00001	446
4613.77463	2.	P18	2.300E-03	2.	2.288E-03	.5	12011	00001	446
4612.78287	0.	P19	2.210E-03	3.	2.236E-03	-1.2	12011	00001	446

Table 4. continued

observed position	o-c	line	strength			(o-c)t	band		
			observed	st	computed		upper	lower	mol
4610.77332	1.	P21	2.090E-03	2.	2.094E-03	-2.	12011	00001	446
4609.75549	2.	P22	1.990E-03	3.	2.007E-03	-9.	12011	-00001	446
4608.72887	-1.	P23	1.920E-03	2.	1.913E-03	.4	12011	00001	446
4607.69349	-1.	P24	1.810E-03	3.	1.812E-03	-1.	12011	00001	446
4606.64929	-3.	P25	1.710E-03	2.	1.706E-03	.2	12011	00001	446
4605.59631	0.	P26	1.610E-03	2.	1.598E-03	.7	12011	00001	446
4604.53446	3.	P27	1.500E-03	2.	1.489E-03	.8	12011	00001	446
4603.46368	1.	P28	1.390E-03	2.	1.379E-03	.8	12011	00001	446
4602.38399	2.	P29	1.290E-03	2.	1.271E-03	1.4	12011	00001	446
4600.19768	2.	P31	1.070E-03	3.	1.064E-03	.6	12011	00001	446
4596.85037	-2.	P34	8.000E-04	3.	7.839E-04	2.0	12011	00001	446
4594.57326	1.	P36	6.310E-04	2.	6.243E-04	1.1	12011	00001	446
4593.42089	1.	P37	5.620E-04	2.	5.532E-04	1.6	12011	00001	446
4592.25926	0.	P38	4.980E-04	2.	4.879E-04	2.0	12011	00001	446
4591.08836	2.	P39	4.350E-04	2.	4.283E-04	1.5	12011	00001	446
*4589.90814	4.	P40	3.780E-04	2.	3.742E-04	1.0	12011	00001	446
*4588.71855	7.	P41	3.340E-04	3.	3.255E-04	2.5	12011	00001	446
*4587.51967	20.	P42	2.850E-04	2.	2.818E-04	1.1	12011	00001	446
*4586.31127	27.	P43	2.450E-04	2.	2.429E-04	.9	12011	00001	446
*4585.09344	39.	P44	2.160E-04	2.	2.084E-04	3.5	12011	00001	446
*4581.38309	122.	P47	1.270E-04	2.	1.282E-04	-.9	12011	00001	446
*4580.12719	162.	P48	1.080E-04	2.	1.080E-04	.0	12011	00001	446
*4578.86230	270.	P49	9.030E-05	2.	9.067E-05	-.4	12011	00001	446
*4577.58900	508.	P50	7.620E-05	2.	7.576E-05	.6	12011	00001	446
*4574.97473	-2852.	P52	4.400E-05	5.	5.220E-05	-18.6	12011	00001	446
*4575.31488	31163.	P52	4.290E-06	5.	5.220E-05	-1116.9	08001	00001	446
*4572.37828	-501.	P54	3.560E-05	5.	3.535E-05	.7	12011	00001	446
*4568.37664	-247.	P57	1.920E-05	2.	1.908E-05	.6	12011	00001	446
*4567.02269	-178.	P58	1.500E-05	4.	1.540E-05	-2.7	12011	00001	446
*4565.65835	-147.	P59	1.210E-05	5.	1.238E-05	-2.3	12011	00001	446
*4564.28393	-123.	P60	1.020E-05	5.	9.908E-06	2.9	12011	00001	446
*4562.89959	-85.	P61	7.440E-06	5.	7.897E-06	-6.1	12011	00001	446
4560.10071	-10.	P63	5.060E-06	5.	4.954E-06	2.1	12011	00001	446
4557.26103	25.	P65	2.870E-06	5.	3.055E-06	-6.5	12011	00001	446
4614.47157	4.	R 2	5.500E-05	3.	5.591E-05	-1.7	13111	01101	446
4615.27176	-14.	R 3	7.640E-05	3.	7.779E-05	-1.8	13111	01101	446
4618.37812	-9.	R 7	1.510E-04	2.	1.504E-04	.4	13111	01101	446
4619.13094	0.	R 8	1.660E-04	3.	1.647E-04	.8	13111	01101	446
4619.87412	-1.	R 9	1.800E-04	4.	1.772E-04	1.6	13111	01101	446
4621.33174	-7.	R11	1.930E-04	2.	1.966E-04	-1.9	13111	01101	446
4622.04634	7.	R12	2.020E-04	4.	2.035E-04	-.7	13111	01101	446
4622.75120	6.	R13	2.060E-04	2.	2.085E-04	-1.2	13111	01101	446
4623.44645	5.	R14	2.120E-04	4.	2.117E-04	.2	13111	01101	446
4624.13234	31.	R15	2.090E-04	3.	2.130E-04	-1.9	13111	01101	446
4624.80827	25.	R16	2.110E-04	2.	2.127E-04	-.8	13111	01101	446
4625.47451	16.	R17	2.110E-04	3.	2.108E-04	.1	13111	01101	446
4626.13109	7.	R18	2.091E-04	3.	2.074E-04	.8	13111	01101	446
4626.77796	-4.	R19	2.060E-04	2.	2.026E-04	1.6	13111	01101	446
4627.41539	13.	R20	2.090E-04	2.	1.967E-04	5.9	13111	01101	446
4628.04287	7.	R21	1.900E-04	3.	1.898E-04	.1	13111	01101	446
4628.66063	3.	R22	1.840E-04	2.	1.819E-04	1.1	13111	01101	446
4629.26874	11.	R23	1.800E-04	2.	1.734E-04	3.7	13111	01101	446
4629.86679	-9.	R24	1.650E-04	2.	1.644E-04	.4	13111	01101	446
4630.45517	-15.	R25	1.530E-04	1.	1.549E-04	-1.2	13111	01101	446
4631.60239	-27.	R27	1.380E-04	2.	1.353E-04	1.9	13111	01101	446
4632.16132	-21.	R28	1.280E-04	3.	1.255E-04	2.0	13111	01101	446
4632.71051	2.	R29	1.150E-04	3.	1.158E-04	-.7	13111	01101	446
4633.24938	-15.	R30	1.070E-04	2.	1.062E-04	.7	13111	01101	446
4633.77851	-10.	R31	9.510E-05	2.	9.700E-05	-2.0	13111	01101	446
4634.80704	24.	R33	7.840E-05	3.	7.969E-05	-1.6	13111	01101	446
4635.30577	-9.	R34	7.500E-05	3.	7.170E-05	4.4	13111	01101	446
4636.27408	29.	R36	5.630E-05	2.	5.721E-05	-1.6	13111	01101	446
*4636.74363	103.	R37	4.800E-05	5.	5.074E-05	-5.7	13111	01101	446
*4637.20224	94.	R38	4.500E-05	5.	4.480E-05	.5	13111	01101	446
*4637.65118	135.	R39	3.910E-05	2.	3.936E-05	-.7	13111	01101	446
*4638.51827	191.	R41	2.940E-05	2.	2.997E-05	-1.9	13111	01101	446
*4638.93632	200.	R42	2.690E-05	5.	2.598E-05	3.4	13111	01101	446
*4640.51113	729.	R46	1.410E-05	5.	1.401E-05	.7	13111	01101	446
*4640.93504	6443.	R47	5.650E-06	15.	1.187E-05	-110.1	09101	01101	446
*4640.82205	-4856.	R47	5.650E-06	5.	1.187E-05	-110.1	13111	01101	446
*4641.22459	-255.	R48	1.000E-05	4.	1.001E-05	-.1	13111	01101	446
4642.55031	-89.	R52	4.900E-06	10.	4.855E-06	.9	13111	01101	446
4609.46974	-16.	P 3	5.400E-05	5.	5.478E-05	-1.4	13111	01101	446
4608.60284	-26.	P 4	7.400E-05	4.	7.570E-05	-2.3	13111	01101	446

Table 4. continued

observed position	o-c	line	-----strength-----			(o-c)%	band		
			observed	st	computed		upper	lower	mol
4606.84112	3.	P 6	1.130E-04	2.	1.124E-04	.6	13111	01101	446
4605.94592	4.	P 7	1.260E-04	2.	1.283E-04	-1.8	13111	01101	446
4605.04109	-10.	P 8	1.370E-04	3.	1.425E-04	-4.0	13111	01101	446
4604.12707	3.	P 9	1.530E-04	2.	1.549E-04	-1.2	13111	01101	446
4603.20332	-10.	P10	1.630E-04	2.	1.655E-04	-1.5	13111	01101	446
4602.27022	-10.	P11	1.740E-04	2.	1.743E-04	-.2	13111	01101	446
4601.32773	-2.	P12	1.810E-04	3.	1.812E-04	-.1	13111	01101	446
4600.37579	8.	P13	1.850E-04	3.	1.863E-04	-.7	13111	01101	446
4599.41439	20.	P14	1.930E-04	3.	1.896E-04	1.8	13111	01101	446
4598.44331	12.	P15	1.920E-04	2.	1.912E-04	.4	13111	01101	446
4597.46278	8.	P16	1.930E-04	2.	1.911E-04	1.0	13111	01101	446
4596.47273	2.	P17	1.960E-04	3.	1.895E-04	3.3	13111	01101	446
4595.47334	11.	P18	1.860E-04	3.	1.865E-04	-.3	13111	01101	446
4593.44576	2.	P20	1.740E-04	2.	1.769E-04	-1.7	13111	01101	446
4592.41794	22.	P21	1.690E-04	2.	1.706E-04	-.9	13111	01101	446
4591.38019	3.	P22	1.640E-04	2.	1.635E-04	.3	13111	01101	446
4590.33302	-4.	P23	1.520E-04	3.	1.557E-04	-2.4	13111	01101	446
4589.27647	5.	P24	1.480E-04	5.	1.474E-04	.4	13111	01101	446
4588.21009	-12.	P25	1.410E-04	2.	1.388E-04	1.6	13111	01101	446
4587.13427	-14.	P26	1.280E-04	3.	1.299E-04	-1.5	13111	01101	446
4586.04894	-9.	P27	1.200E-04	3.	1.209E-04	-.8	13111	01101	446
4584.95391	-13.	P28	1.130E-04	2.	1.120E-04	.9	13111	01101	446
4583.84943	-1.	P29	1.100E-04	4.	1.031E-04	6.2	13111	01101	446
4582.73502	-18.	P30	9.300E-05	4.	9.450E-05	-1.6	13111	01101	446
4581.61108	-22.	P31	8.560E-05	2.	8.615E-05	-.6	13111	01101	446
4580.47756	-18.	P32	8.000E-05	2.	7.815E-05	2.3	13111	01101	446
4579.33439	-10.	P33	7.250E-05	4.	7.053E-05	2.7	13111	01101	446
4578.18139	-15.	P34	6.400E-05	2.	6.335E-05	1.0	13111	01101	446
4577.01889	1.	P35	5.720E-05	2.	5.662E-05	1.0	13111	01101	446
4575.84654	7.	P36	4.930E-05	3.	5.036E-05	-2.2	13111	01101	446
4574.66459	28.	P37	4.480E-05	4.	4.459E-05	.5	13111	01101	446
4573.47284	45.	P38	4.030E-05	2.	3.928E-05	2.5	13111	01101	446
*4572.27134	67.	P39	3.480E-05	2.	3.445E-05	1.0	13111	01101	446
*4568.60833	164.	P42	2.250E-05	3.	2.260E-05	-.4	13111	01101	446
*4567.36758	188.	P43	1.880E-05	3.	1.946E-05	-3.5	13111	01101	446
*4566.11725	239.	P44	1.660E-05	5.	1.668E-05	-.5	13111	01101	446
*4564.85725	307.	P45	1.440E-05	5.	1.423E-05	1.2	13111	01101	446
*4563.58716	351.	P46	1.290E-05	5.	1.209E-05	6.3	13111	01101	446
*4562.30748	422.	P47	1.030E-05	5.	1.022E-05	.8	13111	01101	446
*4561.02032	729.	P48	8.630E-06	5.	8.607E-06	.3	13111	01101	446
*4559.78191	6896.	P49	3.550E-06	5.	7.214E-06	-103.2	09101	01101	446
*4559.66300	-4995.	P49	3.460E-06	5.	7.214E-06	-108.5	13111	01101	446
*4558.40160	-145.	P50	5.670E-06	5.	6.020E-06	-6.2	13111	01101	446
*4555.75438	50.	P52	3.820E-06	10.	4.138E-06	-8.3	13111	01101	446
*4554.41546	81.	P53	3.600E-06	10.	3.408E-06	5.3	13111	01101	446
4553.06583	11.	P54	2.560E-06	5.	2.795E-06	-9.2	13111	01101	446
4614.48578	27.	R 2	5.500E-05	3.	5.633E-05	-2.4	13112	01102	446
4615.29366	-7.	R 3	7.720E-05	3.	7.837E-05	-1.5	13112	01102	446
4616.09395	-5.	R 4	1.000E-04	2.	9.885E-05	1.2	13112	01102	446
4616.88634	0.	R 5	1.150E-04	3.	1.179E-04	-2.5	13112	01102	446
4618.44694	-14.	R 7	1.550E-04	3.	1.515E-04	2.3	13112	01102	446
4619.21554	5.	R 8	1.730E-04	5.	1.658E-04	4.2	13112	01102	446
4619.97594	3.	R 9	1.900E-04	3.	1.784E-04	6.1	13112	01102	446
4620.72834	3.	R10	1.900E-04	3.	1.891E-04	.5	13112	01102	446
4621.47259	-9.	R11	2.000E-04	2.	1.979E-04	1.1	13112	01102	446
4622.20905	1.	R12	1.980E-04	3.	2.048E-04	-3.4	13112	01102	446
4622.93733	-1.	R13	2.110E-04	3.	2.098E-04	.6	13112	01102	446
4623.65755	-2.	R14	2.130E-04	3.	2.129E-04	-.0	13112	01102	446
4624.36974	2.	R15	2.200E-04	2.	2.143E-04	2.6	13112	01102	446
4625.76971	1.	R17	2.100E-04	2.	2.120E-04	-.9	13112	01102	446
4626.45748	-2.	R18	2.100E-04	2.	2.085E-04	.7	13112	01102	446
4627.13712	-1.	R19	2.040E-04	2.	2.037E-04	.1	13112	01102	446
4627.80861	1.	R20	1.960E-04	2.	1.978E-04	-.9	13112	01102	446
4629.12705	16.	R22	1.780E-04	2.	1.829E-04	-2.7	13112	01102	446
4629.77364	-4.	R23	1.710E-04	2.	1.743E-04	-1.9	13112	01102	446
4630.41224	3.	R24	1.660E-04	3.	1.652E-04	.5	13112	01102	446
4631.66442	8.	R26	1.500E-04	3.	1.458E-04	2.8	13112	01102	446
4632.27793	4.	R27	1.350E-04	2.	1.359E-04	-.7	13112	01102	446
4632.88314	6.	R28	1.310E-04	3.	1.260E-04	3.8	13112	01102	446
4633.47975	-11.	R29	1.150E-04	3.	1.162E-04	-1.1	13112	01102	446
4634.06820	-1.	R30	1.060E-04	3.	1.067E-04	-.6	13112	01102	446
4634.64811	1.	R31	9.800E-05	2.	9.739E-05	.6	13112	01102	446
4635.21948	-2.	R32	8.900E-05	2.	8.847E-05	.6	13112	01102	446
4636.33674	3.	R34	7.350E-05	4.	7.195E-05	2.1	13112	01102	446

Table 4. continued

observed position	o-c	line	strength			(o-c)‡	band		
			observed	s‡	computed		upper	lower	mol
4636.88249	4.	R35	6.600E-05	3.	6.442E-05	2.4	13112	01102	446
4637.41929	-29.	R36	5.730E-05	3.	5.740E-05	-2	13112	01102	446
4637.94819	13.	R37	5.070E-05	3.	5.090E-05	-4	13112	01102	446
4638.46785	-2.	R38	4.500E-05	2.	4.493E-05	-2	13112	01102	446
4638.97907	10.	R39	3.900E-05	5.	3.947E-05	-1.2	13112	01102	446
*4639.48141	8.	R40	3.500E-05	2.	3.452E-05	1.4	13112	01102	446
*4639.97438	-53.	R41	3.070E-05	4.	3.005E-05	2.1	13112	01102	446
*4640.45999	30.	R42	2.530E-05	4.	2.604E-05	-2.9	13112	01102	446
*4641.40222	-48.	R44	1.960E-05	2.	1.929E-05	1.6	13112	01102	446
*4641.86103	14.	R45	1.650E-05	4.	1.649E-05	.1	13112	01102	446
*4642.31042	27.	R46	1.420E-05	3.	1.403E-05	1.2	13112	01102	446
*4643.18277	99.	R48	9.600E-06	5.	1.003E-05	-4.5	13112	01102	446
*4644.02344	602.	R50	7.340E-06	5.	7.043E-06	4.0	13112	01102	446
*4644.77640	-4047.	R52	3.870E-06	5.	4.860E-06	-25.6	13112	01102	446
*4645.18466	-1833.	R53	2.710E-06	5.	4.010E-06	-48.0	13112	01102	446
*4645.56194	-1808.	R54	3.080E-06	5.	3.295E-06	-7.0	13112	01102	446
4609.46944	-23.	P 3	5.400E-05	5.	5.523E-05	-2.3	13112	01102	446
4607.73434	-7.	P 5	9.300E-05	3.	9.565E-05	-2.9	13112	01102	446
4606.85534	43.	P 6	1.130E-04	2.	1.133E-04	-.3	13112	01102	446
4605.96746	-6.	P 7	1.260E-04	2.	1.294E-04	-2.7	13112	01102	446
4605.07214	-7.	P 8	1.420E-04	3.	1.437E-04	-1.2	13112	01102	446
4604.16899	-1.	P 9	1.580E-04	2.	1.563E-04	1.1	13112	01102	446
4603.25779	-9.	P10	1.690E-04	3.	1.670E-04	1.2	13112	01102	446
4602.33881	-3.	P11	1.730E-04	2.	1.759E-04	-1.7	13112	01102	446
4601.41192	3.	P12	1.830E-04	3.	1.829E-04	.1	13112	01102	446
4600.47699	-2.	P13	1.920E-04	3.	1.881E-04	2.1	13112	01102	446
4598.58354	6.	P15	1.930E-04	2.	1.930E-04	.0	13112	01102	446
4597.62483	3.	P16	1.920E-04	2.	1.930E-04	-.5	13112	01102	446
4596.65822	5.	P17	1.920E-04	2.	1.914E-04	.3	13112	01102	446
4595.68358	-1.	P18	1.900E-04	4.	1.884E-04	.8	13112	01102	446
4594.70104	1.	P19	1.800E-04	2.	1.841E-04	-2.3	13112	01102	446
4593.71045	-6.	P20	1.750E-04	3.	1.787E-04	-2.1	13112	01102	446
4592.71195	-3.	P21	1.700E-04	3.	1.724E-04	-1.4	13112	01102	446
4591.70544	-3.	P22	1.620E-04	4.	1.652E-04	-2.0	13112	01102	446
4590.69087	-6.	P23	1.550E-04	2.	1.573E-04	-1.5	13112	01102	446
4589.66840	3.	P24	1.460E-04	3.	1.490E-04	-2.0	13112	01102	446
4588.63781	5.	P25	1.410E-04	4.	1.403E-04	.5	13112	01102	446
4587.59906	-4.	P26	1.310E-04	5.	1.313E-04	-.2	13112	01102	446
4586.55222	-13.	P27	1.210E-04	4.	1.223E-04	-1.0	13112	01102	446
4585.49748	-4.	P28	1.140E-04	2.	1.132E-04	.7	13112	01102	446
4584.43456	-1.	P29	1.030E-04	2.	1.043E-04	-1.3	13112	01102	446
4583.36350	0.	P30	9.550E-05	2.	9.558E-05	-.1	13112	01102	446
4582.28432	4.	P31	8.850E-05	2.	8.714E-05	1.5	13112	01102	446
4581.19681	-7.	P32	8.000E-05	3.	7.905E-05	1.2	13112	01102	446
4580.10138	8.	P33	7.200E-05	3.	7.136E-05	.9	13112	01102	446
4578.99750	-2.	P34	6.450E-05	3.	6.410E-05	.6	13112	01102	446
4577.88551	2.	P35	5.890E-05	4.	5.729E-05	2.7	13112	01102	446
4575.63666	0.	P37	4.500E-05	2.	4.513E-05	-.3	13112	01102	446
4572.20108	-3.	P40	3.050E-05	2.	3.045E-05	.2	13112	01102	446
4571.03916	-5.	P41	2.650E-05	2.	2.646E-05	-.2	13112	01102	446
*4569.86874	-19.	P42	2.330E-05	2.	2.289E-05	1.8	13112	01102	446
*4568.69014	-9.	P43	1.920E-05	3.	1.971E-05	-2.6	13112	01102	446
*4567.50304	-4.	P44	1.660E-05	5.	1.689E-05	-1.8	13112	01102	446
*4566.30747	-1.	P45	1.410E-05	5.	1.441E-05	-2.2	13112	01102	446
*4563.89048	-34.	P47	1.050E-05	5.	1.036E-05	1.4	13112	01102	446
*4562.66949	-22.	P48	9.280E-06	5.	8.720E-06	6.0	13112	01102	446
*4560.20237	52.	P50	6.380E-06	5.	6.100E-06	4.4	13112	01102	446
*4557.70592	623.	P52	4.130E-06	5.	4.194E-06	-1.5	13112	01102	446
*4556.46786	3214.	P53	3.630E-06	5.	3.455E-06	4.8	13112	01102	446
*4555.12241	-4072.	P54	2.500E-06	5.	2.833E-06	-13.3	13112	01102	446
*4553.85945	-2247.	P55	2.850E-06	15.	2.314E-06	18.8	13112	01102	446
5030.64612	-54.	R 1	1.070E-05	3.	1.044E-05	2.5	33101	01101	446
5031.45469	27.	R 2	1.840E-05	2.	1.842E-05	-.1	33101	01101	446
5032.25227	30.	R 3	2.570E-05	3.	2.562E-05	.3	33101	01101	446
*5033.04007	76.	R 4	3.240E-05	2.	3.229E-05	.3	33101	01101	446
*5033.81734	91.	R 5	3.920E-05	2.	3.850E-05	1.8	33101	01101	446
*5034.58454	121.	R 6	4.440E-05	3.	4.422E-05	.4	33101	01101	446
*5036.08889	245.	R 8	5.450E-05	2.	5.407E-05	.8	33101	01101	446
*5036.82625	360.	R 9	5.830E-05	4.	5.814E-05	.3	33101	01101	446
*5037.55397	536.	R10	6.060E-05	1.	6.160E-05	-1.7	33101	01101	446
*5038.27619	1187.	R11	5.730E-05	2.	6.445E-05	-12.5	33101	01101	446
*5038.18240	-8192.	R11	7.900E-06	5.	6.445E-05	-715.8	06211	01101	446
*5038.95204	-1773.	R12	4.950E-05	2.	6.667E-05	-34.7	33101	01101	446
*5039.02524	5547.	R12	1.620E-05	4.	6.667E-05	-311.5	06211	01101	446

Table 4. continued

observed position	o-c	line	strength			(o-c)%	band		
			observed	s%	computed		upper	lower	mol
*5039.65904	-592.	R13	6.800E-05	2.	6.827E-05	-.4	33101	01101	446
*5040.34670	-318.	R14	6.840E-05	2.	6.927E-05	-1.3	33101	01101	446
*5041.02244	-208.	R15	6.920E-05	1.	6.968E-05	-.7	33101	01101	446
*5041.68757	-129.	R16	6.940E-05	1.	6.954E-05	-.2	33101	01101	446
*5042.34199	-90.	R17	7.000E-05	2.	6.887E-05	1.6	33101	01101	446
*5042.98644	-18.	R18	6.900E-05	3.	6.773E-05	1.8	33101	01101	446
*5044.24256	-50.	R20	6.670E-05	4.	6.419E-05	3.8	33101	01101	446
*5044.85586	11.	R21	6.090E-05	2.	6.189E-05	-1.6	33101	01101	446
5046.04974	-26.	R23	5.800E-05	2.	5.652E-05	2.6	33101	01101	446
5046.63166	13.	R24	5.360E-05	1.	5.354E-05	.1	33101	01101	446
5047.20279	16.	R25	4.900E-05	2.	5.044E-05	-2.9	33101	01101	446
5047.76321	-8.	R26	4.730E-05	2.	4.725E-05	.1	33101	01101	446
5048.31364	15.	R27	4.360E-05	1.	4.403E-05	-1.0	33101	01101	446
5048.85324	1.	R28	3.920E-05	2.	4.081E-05	-4.1	33101	01101	446
5049.38234	-14.	R29	3.790E-05	1.	3.763E-05	.7	33101	01101	446
5050.40924	-22.	R31	3.100E-05	3.	3.152E-05	-1.7	33101	01101	446
5050.90714	-3.	R32	2.860E-05	1.	2.863E-05	-.1	33101	01101	446
5051.39464	30.	R33	2.580E-05	5.	2.587E-05	-.3	33101	01101	446
5051.87080	-20.	R34	2.280E-05	1.	2.327E-05	-2.1	33101	01101	446
5053.23794	9.	R37	1.650E-05	2.	1.646E-05	.3	33101	01101	446
5053.67254	4.	R38	1.400E-05	10.	1.452E-05	-3.7	33101	01101	446
5054.51054	1.	R40	1.080E-05	2.	1.116E-05	-3.3	33101	01101	446
5056.42675	21.	R45	5.400E-06	5.	5.326E-06	1.4	33101	01101	446
*5023.81836	72.	P 6	3.600E-05	3.	3.725E-05	-3.5	33101	01101	446
*5022.91864	43.	P 7	4.230E-05	2.	4.255E-05	-.6	33101	01101	446
*5022.00968	108.	P 8	4.600E-05	5.	4.729E-05	-2.8	33101	01101	446
*5021.09065	181.	P 9	5.220E-05	3.	5.146E-05	1.4	33101	01101	446
*5020.16124	232.	P10	5.500E-05	5.	5.503E-05	-.1	33101	01101	446
*5019.22222	338.	P11	5.800E-05	2.	5.799E-05	.0	33101	01101	446
*5018.27393	533.	P12	5.950E-05	2.	6.034E-05	-1.4	33101	01101	446
*5017.31995	1173.	P13	5.700E-05	3.	6.207E-05	-8.9	33101	01101	446
*5017.22634	-8188.	P13	7.210E-06	3.	6.207E-05	-760.9	06211	01101	446
*5016.31989	-1780.	P14	4.700E-05	2.	6.322E-05	-34.5	33101	01101	446
*5016.39206	5437.	P14	1.630E-05	3.	6.322E-05	-287.9	06211	01101	446
*5015.35114	-587.	P15	6.150E-05	3.	6.379E-05	-3.7	33101	01101	446
*5014.36304	-314.	P16	6.170E-05	2.	6.382E-05	-3.4	33101	01101	446
*5013.36328	-192.	P17	6.210E-05	2.	6.334E-05	-2.0	33101	01101	446
*5012.35290	-117.	P18	6.400E-05	2.	6.239E-05	2.5	33101	01101	446
*5011.33206	-72.	P19	6.070E-05	1.	6.102E-05	-.5	33101	01101	446
*5010.30082	-52.	P20	5.900E-05	3.	5.928E-05	-.5	33101	01101	446
*5009.25942	-31.	P21	5.830E-05	2.	5.720E-05	1.9	33101	01101	446
*5008.20774	-22.	P22	5.450E-05	1.	5.486E-05	-.7	33101	01101	446
5006.07382	-7.	P24	4.900E-05	3.	4.955E-05	-1.1	33101	01101	446
5004.99157	-1.	P25	4.800E-05	2.	4.669E-05	2.7	33101	01101	446
5003.89909	3.	P26	4.400E-05	2.	4.374E-05	.6	33101	01101	446
5002.79619	-15.	P27	4.070E-05	2.	4.076E-05	-.1	33101	01101	446
5001.68344	2.	P28	3.700E-05	4.	3.777E-05	-2.1	33101	01101	446
4999.42714	24.	P30	3.220E-05	2.	3.194E-05	.8	33101	01101	446
4998.28352	23.	P31	2.900E-05	3.	2.914E-05	-.5	33101	01101	446
4995.96544	10.	P33	2.400E-05	2.	2.390E-05	.4	33101	01101	446
4993.60616	-26.	P35	1.940E-05	3.	1.922E-05	.9	33101	01101	446
4992.41141	-20.	P36	1.650E-05	2.	1.711E-05	-3.7	33101	01101	446
4991.20646	-11.	P37	1.520E-05	1.	1.516E-05	.2	33101	01101	446
4988.76600	8.	P39	1.300E-05	10.	1.174E-05	9.7	33101	01101	446
4987.53047	10.	P40	1.070E-05	5.	1.026E-05	4.1	33101	01101	446
4985.02914	11.	P42	7.470E-06	5.	7.723E-06	-3.4	33101	01101	446
4982.48794	13.	P44	6.130E-06	4.	5.710E-06	6.8	33101	01101	446
4981.20280	32.	P45	4.490E-06	5.	4.877E-06	-8.6	33101	01101	446
4979.90714	-35.	P46	3.790E-06	10.	4.147E-06	-9.4	33101	01101	446
5033.08169	-26.	R 4	3.320E-05	2.	3.208E-05	3.4	33102	01102	446
5033.87414	12.	R 5	3.770E-05	2.	3.823E-05	-1.4	33102	01102	446
*5034.65866	59.	R 6	4.400E-05	2.	4.389E-05	.2	33102	01102	446
*5035.43518	105.	R 7	4.970E-05	2.	4.903E-05	1.3	33102	01102	446
*5036.96484	259.	R 9	5.900E-05	2.	5.763E-05	2.3	33102	01102	446
*5037.71744	314.	R10	6.200E-05	4.	6.104E-05	1.6	33102	01102	446
*5039.20006	571.	R12	6.700E-05	2.	6.600E-05	1.5	33102	01102	446
*5039.92974	740.	R13	6.600E-05	2.	6.755E-05	-2.3	33102	01102	446
*5041.36898	1475.	R15	6.500E-05	1.	6.887E-05	-6.0	33102	01102	446
*5041.20504	-14919.	R15	4.960E-06	4.	6.887E-05	-1288.4	06212	01102	446
*5042.08275	2463.	R16	5.670E-05	1.	6.869E-05	-21.1	33102	01102	446
*5041.96878	-8934.	R16	1.340E-05	1.	6.868E-05	-412.6	06212	01102	446
*5042.80569	5174.	R17	3.200E-05	2.	6.799E-05	-112.5	06212	01102	446
*5043.42285	-1888.	R18	5.540E-05	1.	6.682E-05	-20.6	33102	01102	446
*5043.54911	10738.	R18	1.200E-05	1.	6.682E-05	-456.8	06212	01102	446

Table 4. continued

observed position	o-c	line	strength			(o-c)†	band			mol
			observed	st	computed		upper	lower		
*5044.11086	-1057.	R19	6.070E-05	1.	6.522E-05	-7.5	33102	01102	446	
*5044.30250	18107.	R19	4.260E-06	5.	6.523E-05	-1431.1	06212	01102	446	
*5044.78657	-649.	R20	5.900E-05	2.	6.325E-05	-7.2	33102	01102	446	
*5046.75714	-218.	R23	5.500E-05	3.	5.558E-05	-1.1	33102	01102	446	
*5047.39784	-65.	R24	4.990E-05	2.	5.261E-05	-5.4	33102	01102	446	
*5048.02885	-65.	R25	5.400E-05	10.	4.953E-05	8.3	33102	01102	446	
*5048.65154	-80.	R26	4.700E-05	2.	4.636E-05	1.4	33102	01102	446	
5049.26706	8.	R27	4.260E-05	3.	4.317E-05	-1.3	33102	01102	446	
5049.87347	6.	R28	3.940E-05	2.	3.998E-05	-1.5	33102	01102	446	
5050.47172	12.	R29	3.800E-05	4.	3.684E-05	3.0	33102	01102	446	
5051.06169	15.	R30	3.400E-05	1.	3.377E-05	-7	33102	01102	446	
5052.21659	6.	R32	2.870E-05	2.	2.795E-05	2.6	33102	01102	446	
5053.33790	-30.	R34	2.220E-05	1.	2.269E-05	-2.2	33102	01102	446	
5053.88624	-22.	R35	2.100E-05	2.	2.029E-05	3.4	33102	01102	446	
5054.42631	-1.	R36	1.800E-05	3.	1.806E-05	-3	33102	01102	446	
5055.48047	-27.	R38	1.400E-05	5.	1.411E-05	-8	33102	01102	446	
5055.99523	-4.	R39	1.190E-05	3.	1.238E-05	-4.0	33102	01102	446	
5056.50103	-27.	R40	1.140E-05	5.	1.081E-05	5.1	33102	01102	446	
5056.99833	-50.	R41	9.180E-06	1.	9.403E-06	-2.4	33102	01102	446	
5058.44031	-8.	R44	5.730E-06	5.	6.016E-06	-5.0	33102	01102	446	
5059.80534	-17.	R47	3.800E-06	5.	3.696E-06	2.7	33102	01102	446	
5027.31419	12.	P 2	1.000E-05	4.	1.028E-05	-2.8	33102	01102	446	
5024.72251	-9.	P 5	3.150E-05	3.	3.129E-05	.7	33102	01102	446	
5023.84263	-23.	P 6	3.650E-05	3.	3.711E-05	-1.7	33102	01102	446	
5022.95555	35.	P 7	4.250E-05	4.	4.239E-05	.3	33102	01102	446	
*5022.06050	91.	P 8	4.740E-05	1.	4.712E-05	.6	33102	01102	446	
*5021.15666	61.	P 9	5.500E-05	10.	5.128E-05	6.8	33102	01102	446	
*5019.32761	243.	P11	6.200E-05	10.	5.779E-05	6.8	33102	01102	446	
*5018.40129	341.	P12	5.900E-05	3.	6.013E-05	-1.9	33102	01102	446	
*5017.46687	422.	P13	6.100E-05	3.	6.187E-05	-1.4	33102	01102	446	
*5016.52538	586.	P14	6.170E-05	1.	6.301E-05	-2.1	33102	01102	446	
*5015.57573	725.	P15	6.220E-05	2.	6.358E-05	-2.2	33102	01102	446	
*5014.61964	1011.	P16	6.100E-05	3.	6.360E-05	-4.3	33102	01102	446	
*5013.65739	1471.	P17	5.850E-05	1.	6.312E-05	-7.9	33112	01102	446	
*5013.49364	-14904.	P17	3.270E-06	5.	6.312E-05	-1830.3	06212	01102	446	
*5012.69264	2470.	P18	5.120E-05	2.	6.217E-05	-21.4	33102	01102	446	
*5012.57851	-8943.	P18	1.100E-05	5.	6.217E-05	-465.2	06212	01102	446	
*5011.64394	-4134.	P19	3.100E-05	3.	6.080E-05	-96.1	33102	01102	446	
*5011.73701	5173.	P19	2.900E-05	1.	6.080E-05	-109.7	06212	01102	446	
*5010.67594	-1880.	P20	4.870E-05	1.	5.906E-05	-21.3	33102	01102	446	
*5009.68595	-1033.	P21	5.300E-05	2.	5.698E-05	-7.5	33102	01102	446	
*5009.87707	18079.	P21	5.070E-06	10.	5.699E-05	-1024.0	06212	01102	446	
*5008.68344	-649.	P22	5.300E-05	4.	5.464E-05	-3.1	33102	01102	446	
*5007.67142	-425.	P23	5.100E-05	3.	5.207E-05	-2.1	33102	01102	446	
*5006.65034	-316.	P24	5.170E-05	2.	4.934E-05	4.6	33102	01102	446	
*5005.62130	-210.	P25	4.620E-05	1.	4.647E-05	-6	33102	01102	446	
*5004.58414	-124.	P26	4.530E-05	2.	4.353E-05	3.9	33102	01102	446	
*5003.53881	-61.	P27	4.040E-05	3.	4.055E-05	-4	33102	01102	446	
*5002.48495	-57.	P28	3.830E-05	1.	3.757E-05	1.9	33102	01102	446	
5001.42334	-32.	P29	3.420E-05	2.	3.463E-05	-1.2	33102	01102	446	
4999.27574	-28.	P31	2.700E-05	3.	2.896E-05	-7.3	33102	01102	446	
4998.19058	37.	P32	2.580E-05	5.	2.628E-05	-1.9	33102	01102	446	
4997.09649	10.	P33	2.300E-05	3.	2.374E-05	-3.2	33102	01102	446	
4993.76621	-49.	P36	1.720E-05	3.	1.697E-05	1.3	33102	01102	446	
4992.64099	32.	P37	1.460E-05	2.	1.503E-05	-3.0	33102	01102	446	
4989.21456	58.	P40	1.030E-05	2.	1.016E-05	1.4	33102	01102	446	
4985.71484	69.	P43	6.390E-06	5.	6.579E-06	-3.0	33102	01102	446	
4979.71873	23.	P48	2.750E-06	5.	2.915E-06	-6.0	33102	01102	446	
5629.72015	5.	R 5	1.340E-05	5.	1.360E-05	-1.5	11121	01101	446	
5630.43851	-11.	R 6	1.530E-05	5.	1.558E-05	-1.8	11121	01101	446	
5631.82413	-15.	R 8	1.830E-05	5.	1.895E-05	-3.6	11121	01101	446	
5632.49115	-25.	R 9	2.000E-05	5.	2.033E-05	-1.6	11121	01101	446	
5633.14138	-1.	R10	2.110E-05	5.	2.148E-05	-1.8	11121	01101	446	
5633.77429	7.	R11	2.240E-05	5.	2.241E-05	.0	11121	01101	446	
5634.98865	19.	R13	2.450E-05	5.	2.360E-05	3.7	11121	01101	446	
5635.57015	28.	R14	2.230E-05	5.	2.387E-05	-7.0	11121	01101	446	
5637.72407	12.	R18	2.280E-05	5.	2.303E-05	-1.0	11121	01101	446	
5638.69850	44.	R20	2.170E-05	5.	2.167E-05	.1	11121	01101	446	
*5639.16050	112.	R21	2.100E-05	5.	2.082E-05	.9	11121	01101	446	
*5639.60452	97.	R22	1.920E-05	5.	1.988E-05	-3.5	11121	01101	446	
*5640.03222	167.	R23	1.810E-05	5.	1.887E-05	-4.2	11121	01101	446	
*5640.44275	234.	R24	1.740E-05	5.	1.780E-05	-2.3	11121	01101	446	
*5640.84673	1362.	R25	1.280E-05	5.	1.671E-05	-30.5	11121	01101	446	
*5640.78664	-4647.	R25	3.930E-06	5.	1.670E-05	-325.1	07111	01101	446	

Table 4. continued

observed position	o-c	line	strength			(o-c)‡	band		
			observed	st	computed		upper	lower	mol
*5641.20716	-148.	R26	1.540E-05	4.	1.559E-05	-1.2	11121	01101	446
*5641.56660	-42.	R27	1.500E-05	5.	1.446E-05	3.6	11121	01101	446
*5641.90821	-5.	R28	1.400E-05	5.	1.335E-05	4.6	11121	01101	446
*5642.23285	51.	R29	1.270E-05	5.	1.226E-05	3.5	11121	01101	446
*5642.53972	45.	R30	1.090E-05	5.	1.120E-05	-2.7	11121	01101	446
5642.82957	53.	R31	1.000E-05	5.	1.017E-05	-1.7	11121	01101	446
5643.10147	-20.	R32	9.430E-06	5.	9.200E-06	2.4	11121	01101	446
5643.35728	13.	R33	8.130E-06	5.	8.277E-06	-1.8	11121	01101	446
5643.59600	52.	R34	7.500E-06	5.	7.410E-06	1.2	11121	01101	446
5643.81671	2.	R35	7.040E-06	5.	6.601E-06	6.2	11121	01101	446
5644.02101	27.	R36	6.000E-06	10.	5.852E-06	2.5	11121	01101	446
5644.66539	-26.	R40	3.360E-06	10.	3.447E-06	-2.6	11121	01101	446
*5596.38070	-4612.	P27	4.380E-06	5.	1.486E-05	-239.3	07111	01101	446
*5595.12686	-191.	P28	1.350E-05	3.	1.377E-05	-2.0	11121	01101	446
*5593.81351	-29.	P29	1.270E-05	1.	1.268E-05	.1	11121	01101	446
*5591.13356	41.	P31	1.030E-05	3.	1.060E-05	-2.9	11121	01101	446
*5589.76775	27.	P32	9.450E-06	2.	9.615E-06	-1.8	11121	01101	446
5588.38533	41.	P33	7.900E-06	10.	8.679E-06	-9.9	11121	01101	446
5585.56963	40.	P35	6.920E-06	5.	6.965E-06	-.7	11121	01101	446
5584.13576	-33.	P36	5.670E-06	10.	6.194E-06	-9.2	11121	01101	446
5582.68557	-56.	P37	5.150E-06	1.	5.482E-06	-6.4	11121	01101	446
5581.21948	14.	P38	4.720E-06	2.	4.829E-06	-2.3	11121	01101	446
5629.73255	37.	R 5	1.340E-05	5.	1.355E-05	-1.1	11122	01102	446
5630.45347	14.	R 6	1.530E-05	5.	1.553E-05	-1.5	11122	01102	446
5631.84463	-4.	R 8	1.830E-05	5.	1.890E-05	-3.3	11122	01102	446
5632.51455	-32.	R 9	2.000E-05	5.	2.027E-05	-1.3	11122	01102	446
5633.16775	-32.	R10	2.110E-05	5.	2.142E-05	-1.5	11122	01102	446
5633.80445	18.	R11	2.240E-05	5.	2.235E-05	.2	11122	01102	446
5634.42320	-29.	R12	2.250E-05	5.	2.306E-05	-2.5	11122	01102	446
5635.02585	15.	R13	2.280E-05	5.	2.354E-05	-3.3	11122	01102	446
5635.61083	-9.	R14	2.360E-05	5.	2.381E-05	-.9	11122	01102	446
5636.17921	7.	R15	2.490E-05	5.	2.388E-05	4.1	11122	01102	446
5636.73035	-1.	R16	2.400E-05	5.	2.376E-05	1.0	11122	01102	446
5637.26475	17.	R17	2.300E-05	5.	2.345E-05	-2.0	11122	01102	446
5637.78204	24.	R18	2.250E-05	5.	2.299E-05	-2.2	11122	01102	446
5638.28218	17.	R19	2.200E-05	5.	2.238E-05	-1.7	11122	01102	446
*5638.76522	-1.	R20	2.130E-05	5.	2.164E-05	-1.6	11122	01102	446
*5639.23183	40.	R21	2.110E-05	5.	2.079E-05	1.5	11122	01102	446
*5639.68126	61.	R22	1.970E-05	5.	1.985E-05	-.8	11122	01102	446
*5640.11310	24.	R23	1.840E-05	5.	1.884E-05	-2.4	11122	01102	446
*5640.92719	90.	R25	1.660E-05	5.	1.668E-05	-.5	11122	01102	446
*5641.30899	147.	R26	1.520E-05	5.	1.556E-05	-2.4	11122	01102	446
*5641.67480	306.	R27	1.450E-05	5.	1.444E-05	.4	11122	01102	446
*5642.04495	2596.	R28	6.400E-06	5.	1.333E-05	-108.3	11122	01102	446
*5641.98690	-3209.	R28	6.760E-06	5.	1.333E-05	-97.2	07112	01102	446
*5642.34606	-317.	R29	1.180E-05	5.	1.224E-05	-3.7	11122	01102	446
*5642.66071	-179.	R30	1.170E-05	5.	1.118E-05	4.4	11122	01102	446
*5642.95773	-105.	R31	1.000E-05	5.	1.016E-05	-1.6	11122	01102	446
*5643.23705	-103.	R32	9.200E-06	5.	9.186E-06	.2	11122	01102	446
*5643.49978	-63.	R33	8.500E-06	5.	8.264E-06	2.8	11122	01102	446
5643.74557	-20.	R34	7.630E-06	5.	7.398E-06	3.0	11122	01102	446
5643.97415	-1.	R35	6.700E-06	5.	6.590E-06	1.6	11122	01102	446
5644.71789	-30.	R39	3.890E-06	10.	3.955E-06	-1.7	11122	01102	446
5644.86215	30.	R40	3.640E-06	5.	3.441E-06	5.5	11122	01102	446
5611.74835	-31.	P14	2.310E-05	5.	2.283E-05	1.2	11122	01102	446
*5601.45235	184.	P23	1.930E-05	5.	1.887E-05	2.2	11122	01102	446
*5600.22375	162.	P24	1.830E-05	5.	1.787E-05	2.3	11122	01102	446
*5595.14198	128.	P28	1.350E-05	3.	1.358E-05	-.6	11122	01102	446
*5593.83158	316.	P29	1.270E-05	1.	1.251E-05	1.5	11122	01102	446
*5592.52535	2594.	P30	6.760E-06	5.	1.146E-05	-69.5	11122	01102	446
*5591.15040	-325.	P31	1.030E-05	3.	1.045E-05	-1.4	11122	01102	446
*5589.78873	-244.	P32	9.200E-06	2.	9.472E-06	-3.0	11122	01102	446
*5588.41102	-96.	P33	8.230E-06	2.	8.545E-06	-3.8	11122	01102	446
*5585.60293	-59.	P35	6.510E-06	5.	6.852E-06	-5.2	11122	01102	446
5581.26544	-37.	P38	4.840E-06	5.	4.743E-06	2.0	11122	01102	446
7217.84376	-30.	R 3	7.100E-06	5.	7.001E-06	1.4	40011	00001	446
7218.58808	-5.	R 4	8.040E-06	5.	8.611E-06	-7.1	40011	00001	446
7221.37701	34.	R 8	1.500E-05	5.	1.395E-05	7.0	40011	00001	446
7222.65809	-39.	R10	1.670E-05	5.	1.578E-05	5.5	40011	00001	446
7223.86498	-50.	R12	1.630E-05	5.	1.698E-05	-4.2	40011	00001	446
7224.44126	28.	R13	1.640E-05	5.	1.735E-05	-5.8	40011	00001	446
7224.99803	18.	R14	1.790E-05	5.	1.756E-05	1.9	40011	00001	446
7226.55686	-6.	R17	1.850E-05	5.	1.733E-05	6.3	40011	00001	446

Table 4. continued

observed position	o-c	line	strength			(o-c)%	band		
			observed	s%	computed		upper	lower	mol
7227.50349	-19.	R19	1.690E-05	5.	1.657E-05	2.0	40011	00001	446
7228.37726	.59.	R21	1.600E-05	5.	1.542E-05	3.6	40011	00001	446
7228.78473	-87.	R22	1.420E-05	5.	1.474E-05	-3.8	40011	00001	446
7229.17651	30.	R23	1.330E-05	5.	1.401E-05	-5.3	40011	00001	446
7229.54769	-86.	R24	1.400E-05	5.	1.324E-05	5.5	40011	00001	446
7230.23792	-66.	R26	1.100E-05	5.	1.162E-05	-5.6	40011	00001	446
7231.13788	7.	R29	9.440E-06	5.	9.170E-06	2.9	40011	00001	446
7231.40145	-11.	R30	8.420E-06	5.	8.387E-06	.4	40011	00001	446
7212.10883	-65.	P 3	5.600E-06	5.	5.247E-06	6.3	40011	00001	446
7210.30163	-37.	P 5	8.320E-06	5.	8.428E-06	-1.3	40011	00001	446
7209.37031	18.	P 6	1.050E-05	5.	9.868E-06	6.0	40011	00001	446
7208.41980	27.	P 7	1.140E-05	5.	1.119E-05	1.9	40011	00001	446
7207.44980	-40.	P 8	1.200E-05	5.	1.237E-05	-3.1	40011	00001	446
7204.43025	13.	P11	1.510E-05	5.	1.505E-05	.3	40011	00001	446
7203.38619	6.	P12	1.560E-05	5.	1.563E-05	-.2	40011	00001	446
7202.32341	-12.	P13	1.740E-05	5.	1.606E-05	7.7	40011	00001	446
7201.24246	9.	P14	1.730E-05	5.	1.633E-05	5.6	40011	00001	446
7200.14230	-35.	P15	1.510E-05	5.	1.646E-05	-9.0	40011	00001	446
7199.02484	41.	P16	1.650E-05	5.	1.645E-05	.3	40011	00001	446
7195.55963	58.	P19	1.610E-05	5.	1.567E-05	2.7	40011	00001	446
7194.36787	72.	P20	1.460E-05	5.	1.520E-05	-4.1	40011	00001	446
7193.15757	64.	P21	1.470E-05	5.	1.465E-05	.3	40011	00001	446
7189.41672	-16.	P24	1.360E-05	10.	1.264E-05	7.1	40011	00001	446
7186.83233	-48.	P26	1.120E-05	5.	1.112E-05	.7	40011	00001	446
7178.65091	66.	P32	6.350E-06	5.	6.650E-06	-4.7	40011	00001	446
*7174.30076	-1929.	P35	3.950E-06	10.	4.800E-06	-21.5	40011	00001	446

o-c are the observed minus the computed frequencies in $\text{cm}^{-1} \times 10^5$. Transitions denoted by asterisks are perturbed and measured frequencies of these were not included in the analysis

s% are the estimated uncertainties in the measured line strengths in percent.

(o-c)% are the observed minus computed line strengths in percent:

$$(o-c)\% = \{[S(\text{obs.}) - S(\text{comp.})]/S(\text{obs.})\} \times 100$$

Table 5. Observed and computed line positions (cm^{-1}) and strengths ($\text{cm}^{-2}/\text{atm.}$ at 296K) of N_2O bands that can be used for frequency calibration of spectra

observed position	o-c	line	strength			band			
			observed	s‡	computed	(o-c)‡	upper	lower	mol
3676.94037	-8.	P69	6.940E-06	5.	7.548E-06	-8.8	22001	00001	446
3681.90555	3.	P65	2.190E-05	2.	2.082E-05	4.9	22001	00001	446
3686.75717	1.	P61	5.280E-05	4.	5.370E-05	-1.7	22001	00001	446
3687.95250	-6.	P60	6.650E-05	4.	6.734E-05	-1.3	22001	00001	446
3691.49722	-7.	P57	1.330E-04	3.	1.294E-04	2.7	22001	00001	446
3699.53078	4.	P50	5.120E-04	2.	5.118E-04	.0	22001	00001	446
3700.65178	2.	P49	6.200E-04	3.	6.121E-04	1.3	22001	00001	446
3702.87423	1.	P47	8.750E-04	2.	8.643E-04	1.2	22001	00001	446
3703.97579	5.	P46	1.030E-03	1.	1.020E-03	1.0	22001	00001	446
3706.15957	3.	P44	1.440E-03	3.	1.403E-03	2.6	22001	00001	446
3707.24195	6.	P43	1.660E-03	1.	1.634E-03	1.6	22001	00001	446
3708.31799	4.	P42	1.930E-03	3.	1.894E-03	1.9	22001	00001	446
3710.45135	7.	P40	2.580E-03	3.	2.512E-03	2.6	22001	00001	446
3711.50868	4.	P39	2.900E-03	3.	2.873E-03	.9	22001	00001	446
3712.55984	-1.	P38	3.200E-03	4.	3.270E-03	-2.2	22001	00001	446
3714.64398	4.	P36	4.160E-03	2.	4.179E-03	-.5	22001	00001	446
3715.67693	2.	P35	4.710E-03	2.	4.691E-03	.4	22001	00001	446
3716.70391	5.	P34	5.240E-03	1.	5.240E-03	.0	22001	00001	446
3717.72485	-1.	P33	5.750E-03	2.	5.825E-03	-1.3	22001	00001	446
3718.73990	-1.	P32	6.370E-03	1.	6.444E-03	-1.2	22001	00001	446
3719.74910	3.	P31	7.000E-03	4.	7.094E-03	-1.3	22001	00001	446
3721.74975	-5.	P29	8.400E-03	3.	8.467E-03	-.8	22001	00001	446
3723.72731	-3.	P27	9.900E-03	3.	9.900E-03	.0	22001	00001	446
3724.70745	-4.	P26	1.050E-02	5.	1.062E-02	-1.1	22001	00001	446
3727.61372	-8.	P23	1.250E-02	3.	1.268E-02	-1.4	22001	00001	446
3728.57120	-7.	P22	1.280E-02	2.	1.330E-02	-3.9	22001	00001	446
3729.52307	-8.	P21	1.410E-02	3.	1.386E-02	1.7	22001	00001	446
3731.41016	-5.	P19	1.470E-02	4.	1.478E-02	-.5	22001	00001	446
3734.19936	-2.	P16	1.610E-02	3.	1.545E-02	4.0	22001	00001	446
3735.11810	-4.	P15	1.560E-02	2.	1.545E-02	1.0	22001	00001	446
3736.03142	-3.	P14	1.540E-02	3.	1.531E-02	.6	22001	00001	446
3736.93932	0.	P13	1.430E-02	3.	1.504E-02	-5.2	22001	00001	446
3737.84180	3.	P12	1.460E-02	4.	1.463E-02	-.2	22001	00001	446
3738.73881	0.	P11	1.360E-02	3.	1.408E-02	-3.5	22001	00001	446
3739.63044	-1.	P10	1.300E-02	4.	1.338E-02	-2.9	22001	00001	446
3740.51674	2.	P 9	1.220E-02	2.	1.253E-02	-2.7	22001	00001	446
3741.39756	-3.	P 8	1.120E-02	2.	1.155E-02	-3.2	22001	00001	446
3742.27314	3.	P 7	1.020E-02	3.	1.044E-02	-2.4	22001	00001	446
3743.14330	4.	P 6	9.010E-03	2.	9.209E-03	-2.2	22001	00001	446
3744.00809	4.	P 5	7.730E-03	3.	7.864E-03	-1.7	22001	00001	446
3744.86756	7.	P 4	6.290E-03	4.	6.421E-03	-2.1	22001	00001	446
3745.72165	8.	P 3	4.900E-03	2.	4.896E-03	.1	22001	00001	446
3746.57034	3.	P 2	3.300E-03	2.	3.305E-03	-.1	22001	00001	446
3749.08442	5.	R 0	1.610E-03	3.	1.675E-03	-4.0	22001	00001	446
3749.91173	7.	R 1	3.340E-03	1.	3.339E-03	.0	22001	00001	446
3750.73361	3.	R 2	4.920E-03	1.	4.972E-03	-1.0	22001	00001	446
3751.55020	9.	R 3	6.500E-03	1.	6.554E-03	-.8	22001	00001	446
3752.36128	2.	R 4	8.110E-03	3.	8.068E-03	.5	22001	00001	446
3753.16703	3.	R 5	9.450E-03	2.	9.496E-03	-.5	22001	00001	446
3754.76220	-2.	R 7	1.170E-02	3.	1.204E-02	-2.9	22001	00001	446
3755.55165	0.	R 8	1.290E-02	2.	1.313E-02	-1.7	22001	00001	446
3756.33561	-2.	R 9	1.370E-02	2.	1.408E-02	-2.8	22001	00001	446
3757.11410	-2.	R10	1.470E-02	4.	1.489E-02	-1.3	22001	00001	446
3757.88710	-1.	R11	1.530E-02	3.	1.556E-02	-1.7	22001	00001	446
3758.65452	-4.	R12	1.640E-02	3.	1.608E-02	2.0	22001	00001	446
3759.41643	-4.	R13	1.660E-02	2.	1.645E-02	.9	22001	00001	446
3760.17276	-4.	R14	1.680E-02	2.	1.668E-02	.7	22001	00001	446
3760.92348	-5.	R15	1.700E-02	3.	1.677E-02	1.3	22001	00001	446
3761.66859	-5.	R16	1.740E-02	2.	1.673E-02	3.8	22001	00001	446
3762.59580	5.	P65	3.530E-05	13.	3.303E-05	6.4	30001	00001	446
3763.14187	3.	R18	1.640E-02	3.	1.629E-02	.7	22001	00001	446
3763.86982	-8.	R19	1.620E-02	3.	1.591E-02	1.8	22001	00001	446
3766.01935	-6.	R22	1.460E-02	3.	1.426E-02	2.3	22001	00001	446
3766.72420	-7.	R23	1.300E-02	10.	1.359E-02	-4.5	22001	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)%	band			mol
			observed	s%	computed		upper	lower		
3766.78934	-5.	P62	6.960E-05	2.	6.967E-05	-.1	30001	00001	446	
3767.42319	-4.	R24	1.260E-02	3.	1.287E-02	-2.2	22001	00001	446	
3768.11624	-2.	R25	1.200E-02	3.	1.213E-02	-1.1	22001	00001	446	
3768.17308	3.	P61	8.900E-05	2.	8.857E-05	.5	30001	00001	446	
3768.80329	-5.	R26	1.160E-02	3.	1.136E-02	2.0	22001	00001	446	
3769.48440	-1.	R27	1.080E-02	3.	1.059E-02	1.9	22001	00001	446	
3770.15944	-1.	R28	9.700E-03	3.	9.819E-03	-1.2	22001	00001	446	
3770.82838	-2.	R29	9.100E-03	2.	9.056E-03	.5	22001	00001	446	
3770.91856	15.	P59	1.400E-04	2.	1.413E-04	-.9	30001	00001	446	
3771.49122	0.	R30	8.600E-03	3.	8.310E-03	3.4	22001	00001	446	
3772.14788	-1.	R31	7.650E-03	3.	7.588E-03	.8	22001	00001	446	
3773.44255	2.	R33	6.250E-03	2.	6.233E-03	.3	22001	00001	446	
3773.63387	6.	P57	2.240E-04	1.	2.214E-04	1.1	30001	00001	446	
3774.08046	3.	R34	5.660E-03	4.	5.608E-03	.9	22001	00001	446	
3774.71204	5.	R35	5.190E-03	3.	5.021E-03	3.3	22001	00001	446	
3774.98014	10.	P56	2.750E-04	2.	2.754E-04	-.1	30001	00001	446	
3775.33722	7.	R36	4.520E-03	1.	4.475E-03	1.0	22001	00001	446	
3775.95592	4.	R37	4.000E-03	2.	3.969E-03	.8	22001	00001	446	
3776.31854	4.	P55	3.440E-04	1.	3.410E-04	.9	30001	00001	446	
3776.56821	7.	R38	3.520E-03	2.	3.504E-03	.4	22001	00001	446	
3777.17389	3.	R39	3.140E-03	2.	3.080E-03	1.9	22001	00001	446	
3777.64902	-8.	P54	4.200E-04	1.	4.203E-04	-.1	30001	00001	446	
3777.77309	7.	R40	2.740E-03	2.	2.694E-03	1.7	22001	00001	446	
3778.95152	10.	R42	2.060E-03	3.	2.033E-03	1.3	22001	00001	446	
3778.97187	10.	P53	5.030E-04	2.	5.158E-04	-2.5	30001	00001	446	
3779.53062	5.	R43	1.800E-03	5.	1.755E-03	2.5	22001	00001	446	
3780.10297	1.	R44	1.540E-03	2.	1.507E-03	2.1	22001	00001	446	
3780.28645	2.	P52	6.420E-04	1.	6.301E-04	1.9	30001	00001	446	
3780.66857	4.	R45	1.310E-03	2.	1.289E-03	1.6	22001	00001	446	
3781.59296	-4.	P51	7.640E-04	3.	7.664E-04	-.3	30001	00001	446	
3781.77912	4.	R47	9.410E-04	2.	9.304E-04	1.1	22001	00001	446	
3782.86170	-12.	R49	6.550E-04	2.	6.598E-04	-.7	22001	00001	446	
3782.89148	8.	P50	9.280E-04	1.	9.279E-04	.0	30001	00001	446	
3783.39259	-6.	R50	5.580E-04	2.	5.520E-04	1.1	22001	00001	446	
3783.91637	-2.	R51	4.590E-04	3.	4.598E-04	-.2	22001	00001	446	
3784.18154	-3.	P49	1.110E-03	1.	1.116E-03	-.8	30001	00001	446	
3784.43285	-14.	R52	3.840E-04	2.	3.813E-04	.7	22001	00001	446	
3785.93947	-5.	R55	2.110E-04	3.	2.120E-04	-.5	22001	00001	446	
3786.42718	5.	R56	1.740E-04	3.	1.728E-04	.7	22001	00001	446	
3786.73692	-4.	P47	1.630E-03	1.	1.603E-03	1.7	30001	00001	446	
3787.38027	4.	R58	1.120E-04	2.	1.134E-04	-1.2	22001	00001	446	
3788.00200	-4.	P46	1.920E-03	2.	1.906E-03	.8	30001	00001	446	
3788.75386	-11.	R61	6.000E-05	3.	5.835E-05	2.8	22001	00001	446	
3789.25856	-7.	P45	2.290E-03	2.	2.255E-03	1.5	30001	00001	446	
3790.50665	-4.	P44	2.670E-03	1.	2.657E-03	.5	30001	00001	446	
3791.74610	-3.	P43	3.150E-03	1.	3.115E-03	1.1	30001	00001	446	
3792.97692	0.	P42	3.640E-03	1.	3.636E-03	.1	30001	00001	446	
3793.55870	-15.	R73	2.840E-06	15.	2.806E-06	1.2	22001	00001	446	
3794.19899	-1.	P41	4.200E-03	2.	4.223E-03	-.6	30001	00001	446	
3795.41225	-8.	P40	4.870E-03	2.	4.883E-03	-.3	30001	00001	446	
3796.61683	-2.	P39	5.600E-03	1.	5.619E-03	-.3	30001	00001	446	
3797.81251	-2.	P38	6.470E-03	4.	6.435E-03	.5	30001	00001	446	
3798.99927	-2.	P37	7.180E-03	1.	7.334E-03	-2.1	30001	00001	446	
3800.17712	-1.	P36	8.260E-03	2.	8.318E-03	-.7	30001	00001	446	
3801.34593	-5.	P35	9.200E-03	2.	9.388E-03	-2.0	30001	00001	446	
3802.50580	-1.	P34	1.050E-02	2.	1.054E-02	-.4	30001	00001	446	
3803.65658	-1.	P33	1.170E-02	2.	1.178E-02	-.7	30001	00001	446	
3804.79826	-1.	P32	1.280E-02	2.	1.310E-02	-2.3	30001	00001	446	
3805.93083	2.	P31	1.390E-02	2.	1.449E-02	-4.2	30001	00001	446	
3808.16838	1.	P29	1.740E-02	2.	1.746E-02	-.3	30001	00001	446	
3809.27337	4.	P28	1.960E-02	2.	1.901E-02	3.0	30001	00001	446	
3810.36908	6.	P27	2.110E-02	2.	2.059E-02	2.4	30001	00001	446	
3811.45544	1.	P26	2.250E-02	2.	2.217E-02	1.4	30001	00001	446	
3812.53257	5.	P25	2.420E-02	2.	2.375E-02	1.9	30001	00001	446	
3813.60027	0.	P24	2.510E-02	2.	2.529E-02	-.8	30001	00001	446	
3814.65866	1.	P23	2.710E-02	2.	2.678E-02	1.2	30001	00001	446	
3815.70763	1.	P22	2.790E-02	2.	2.818E-02	-1.0	30001	00001	446	
3816.74720	1.	P21	2.920E-02	2.	2.947E-02	-.9	30001	00001	446	
3817.77732	1.	P20	3.020E-02	2.	3.062E-02	-1.4	30001	00001	446	

Table 5. continued

observed position	o-c	line	strength				band		
			observed	s*	computed	(o-c)s*	upper	lower	mol
3818.79798	0.	P19	3.120E-02	3.	3.161E-02	-1.3	30001	00001	446
3819.80924	8.	P18	3.240E-02	2.	3.241E-02	.0	30001	00001	446
3820.81078	-6.	P17	3.430E-02	2.	3.299E-02	3.8	30001	00001	446
3824.72217	-1.	P13	3.240E-02	2.	3.264E-02	-.7	30001	00001	446
3827.55511	1.	P10	2.840E-02	5.	2.917E-02	-2.7	30001	00001	446
3828.48016	-2.	P 9	2.720E-02	2.	2.737E-02	-.6	30001	00001	446
3830.30140	0.	P 7	2.290E-02	3.	2.286E-02	.2	30001	00001	446
3831.19747	-6.	P 6	2.030E-02	3.	2.017E-02	.6	30001	00001	446
3832.08396	-3.	P 5	1.740E-02	2.	1.724E-02	.9	30001	00001	446
3832.96073	-5.	P 4	1.400E-02	3.	1.408E-02	-.6	30001	00001	446
3833.82783	-5.	P 3	1.060E-02	2.	1.074E-02	-1.3	30001	00001	446
3834.68527	-3.	P 2	6.980E-03	1.	7.253E-03	-3.9	30001	00001	446
3835.53298	-4.	P 1	3.580E-03	2.	3.658E-03	-2.2	30001	00001	446
3837.19939	3.	R 0	3.590E-03	2.	3.676E-03	-2.4	30001	00001	446
3838.82685	-2.	R 2	1.070E-02	3.	1.090E-02	-1.8	30001	00001	446
3839.62603	-2.	R 3	1.400E-02	3.	1.436E-02	-2.5	30001	00001	446
3840.41552	-1.	R 4	1.780E-02	2.	1.766E-02	.8	30001	00001	446
3841.96536	2.	R 6	2.380E-02	2.	2.363E-02	.7	30001	00001	446
3842.72566	-2.	R 7	2.640E-02	2.	2.625E-02	.6	30001	00001	446
3844.21725	2.	R 9	3.060E-02	2.	3.060E-02	.0	30001	00001	446
3844.94843	-2.	R10	3.250E-02	2.	3.231E-02	.6	30001	00001	446
3845.66995	-2.	R11	3.320E-02	2.	3.368E-02	-1.5	30001	00001	446
3846.38185	5.	R12	3.500E-02	2.	3.474E-02	.8	30001	00001	446
3847.08395	0.	R13	3.580E-02	2.	3.546E-02	.9	30001	00001	446
3847.77642	0.	R14	3.540E-02	4.	3.587E-02	-1.3	30001	00001	446
3848.45926	4.	R15	3.590E-02	2.	3.597E-02	-.2	30001	00001	446
3849.79591	6.	R17	3.500E-02	2.	3.532E-02	-.9	30001	00001	446
3850.44974	4.	R18	3.520E-02	2.	3.462E-02	1.6	30001	00001	446
3851.09396	2.	R19	3.380E-02	2.	3.370E-02	.3	30001	00001	446
3851.72859	5.	R20	3.240E-02	2.	3.258E-02	-.6	30001	00001	446
3852.35360	4.	R21	3.070E-02	2.	3.130E-02	-2.0	30001	00001	446
3852.96908	9.	R22	3.020E-02	2.	2.989E-02	1.0	30001	00001	446
3854.75794	0.	R25	2.540E-02	2.	2.511E-02	1.1	30001	00001	446
3855.33527	6.	R26	2.300E-02	2.	2.342E-02	-1.8	30001	00001	446
3855.90298	0.	R27	2.200E-02	2.	2.173E-02	1.2	30001	00001	446
3856.46128	-1.	R28	2.040E-02	2.	2.005E-02	1.7	30001	00001	446
3857.01023	9.	R29	1.840E-02	2.	1.841E-02	.0	30001	00001	446
3858.07961	-1.	R31	1.570E-02	2.	1.527E-02	2.8	30001	00001	446
3858.60027	-1.	R32	1.400E-02	2.	1.380E-02	1.5	30001	00001	446
3859.11159	-1.	R33	1.240E-02	1.	1.241E-02	.0	30001	00001	446
3859.61359	-3.	R34	1.100E-02	2.	1.110E-02	-.9	30001	00001	446
3860.10641	6.	R35	9.800E-03	2.	9.881E-03	-.8	30001	00001	446
3860.58980	-3.	R36	8.730E-03	2.	8.754E-03	-.3	30001	00001	446
3861.06406	-3.	R37	7.720E-03	2.	7.718E-03	.0	30001	00001	446
3861.52920	1.	R38	6.710E-03	2.	6.771E-03	-.9	30001	00001	446
3861.98509	-5.	R39	5.930E-03	1.	5.913E-03	.3	30001	00001	446
3862.86973	-5.	R41	4.470E-03	1.	4.445E-03	.6	30001	00001	446
3863.29854	-3.	R42	3.900E-03	3.	3.827E-03	1.9	30001	00001	446
3863.71832	-5.	R43	3.380E-03	2.	3.279E-03	3.0	30001	00001	446
3864.12919	-7.	R44	2.830E-03	1.	2.797E-03	1.2	30001	00001	446
3864.53123	-4.	R45	2.380E-03	1.	2.375E-03	.2	30001	00001	446
3864.92448	2.	R46	2.050E-03	2.	2.007E-03	2.1	30001	00001	446
3865.68462	2.	R48	1.460E-03	2.	1.414E-03	3.2	30001	00001	446
3866.05158	-9.	R49	1.180E-03	1.	1.179E-03	.1	30001	00001	446
3866.41015	0.	R50	1.000E-03	2.	9.782E-04	2.2	30001	00001	446
3866.76008	-2.	R51	8.240E-04	1.	8.081E-04	1.9	30001	00001	446
3867.10162	3.	R52	7.020E-04	12.	6.647E-04	5.3	30001	00001	446
3867.43478	8.	R53	5.650E-04	2.	5.442E-04	3.7	30001	00001	446
3868.38449	5.	R56	2.970E-04	3.	2.909E-04	2.1	30001	00001	446
3868.68487	11.	R57	2.370E-04	2.	2.340E-04	1.3	30001	00001	446
3872.29000	7.	R72	4.860E-06	5.	5.291E-06	-8.9	30001	00001	446
4322.00690	5.	P72	5.550E-06	5.	5.371E-06	3.2	00021	00001	446
4327.38693	14.	P69	1.250E-05	5.	1.216E-05	2.7	00021	00001	446
4336.08405	-10.	P64	4.450E-05	3.	4.360E-05	2.0	00021	00001	446
4339.46858	-14.	P62	7.150E-05	2.	7.053E-05	1.4	00021	00001	446
4342.79930	2.	P60	1.160E-04	3.	1.121E-04	3.3	00021	00001	446
4349.29824	3.	P56	2.780E-04	2.	2.693E-04	3.1	00021	00001	446
4352.46647	1.	P54	4.070E-04	2.	4.066E-04	.1	00021	00001	446
4355.58050	-1.	P52	6.100E-04	2.	6.031E-04	1.1	00021	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)t	band		
			observed	st	computed		upper	lower	mol
4357.11722	2.	P51	7.300E-04	2.	7.298E-04	.0	00021	00001	446
4358.64033	2.	P50	8.800E-04	2.	8.791E-04	.1	00021	00001	446
4361.64582	1.	P48	1.250E-03	3.	1.259E-03	-.7	00021	00001	446
4364.59700	2.	P46	1.740E-03	3.	1.771E-03	-1.8	00021	00001	446
4366.05223	6.	P45	2.030E-03	3.	2.086E-03	-2.7	00021	00001	446
4367.49377	2.	P44	2.420E-03	3.	2.446E-03	-1.1	00021	00001	446
4368.92174	1.	P43	2.830E-03	2.	2.855E-03	-.9	00021	00001	446
4370.33613	3.	P42	3.250E-03	2.	3.318E-03	-2.1	00021	00001	446
4373.12397	1.	P40	4.500E-03	4.	4.418E-03	1.8	00021	00001	446
4374.49745	0.	P39	4.900E-03	5.	5.062E-03	-3.3	00021	00001	446
4375.85733	2.	P38	5.500E-03	5.	5.774E-03	-5.0	00021	00001	446
4378.53607	-1.	P36	7.490E-03	3.	7.404E-03	1.1	00021	00001	446
4379.85502	2.	P35	8.000E-03	3.	8.325E-03	-4.1	00021	00001	446
4381.16024	-1.	P34	9.230E-03	3.	9.314E-03	-.9	00021	00001	446
4382.45184	-1.	P33	1.000E-02	4.	1.037E-02	-3.7	00021	00001	446
4383.72975	-3.	P32	1.110E-02	5.	1.149E-02	-3.5	00021	00001	446
4384.99402	-1.	P31	1.320E-02	3.	1.266E-02	4.1	00021	00001	446
4386.24456	-5.	P30	1.390E-02	3.	1.389E-02	.1	00021	00001	446
4388.70468	-4.	P28	1.660E-02	3.	1.644E-02	.9	00021	00001	446
4389.91423	0.	P27	1.760E-02	3.	1.775E-02	-.9	00021	00001	446
4391.11001	-4.	P26	1.900E-02	4.	1.906E-02	-.3	00021	00001	446
4392.29216	0.	P25	2.000E-02	3.	2.035E-02	-1.7	00021	00001	446
4393.46058	0.	P24	2.260E-02	5.	2.161E-02	4.4	00021	00001	446
4394.61527	0.	P23	2.280E-02	3.	2.281E-02	.0	00021	00001	446
4395.75626	2.	P22	2.360E-02	3.	2.393E-02	-1.4	00021	00001	446
4396.88349	-1.	P21	2.500E-02	3.	2.496E-02	.2	00021	00001	446
4397.99702	-1.	P20	2.600E-02	3.	2.587E-02	.5	00021	00001	446
4399.09682	-1.	P19	2.680E-02	3.	2.663E-02	.6	00021	00001	446
4400.18289	1.	P18	2.720E-02	3.	2.723E-02	-.1	00021	00001	446
4401.25519	-1.	P17	2.720E-02	3.	2.765E-02	-1.7	00021	00001	446
4402.31375	-3.	P16	2.700E-02	3.	2.786E-02	-3.2	00021	00001	446
4404.38967	0.	P14	2.610E-02	10.	2.761E-02	-5.8	00021	00001	446
4405.40697	0.	P13	2.700E-02	3.	2.711E-02	-.4	00021	00001	446
4407.40030	1.	P11	2.460E-02	3.	2.535E-02	-3.1	00021	00001	446
4408.37629	0.	P10	2.420E-02	3.	2.408E-02	.5	00021	00001	446
4410.28696	1.	P 8	2.020E-02	3.	2.078E-02	-2.9	00021	00001	446
4412.14245	-1.	P 6	1.700E-02	4.	1.654E-02	2.7	00021	00001	446
4413.94281	2.	P 4	1.120E-02	5.	1.151E-02	-2.8	00021	00001	446
4414.82227	2.	P 3	8.320E-03	10.	8.767E-03	-5.4	00021	00001	446
4415.68792	2.	P 2	5.620E-03	10.	5.912E-03	-5.2	00021	00001	446
4416.53976	2.	P 1	2.900E-03	5.	2.978E-03	-2.7	00021	00001	446
4419.01235	1.	R 1	5.650E-03	2.	5.941E-03	-5.2	00021	00001	446
4419.80889	1.	R 2	8.140E-03	10.	8.833E-03	-8.5	00021	00001	446
4420.59161	2.	R 3	1.180E-02	3.	1.162E-02	1.5	00021	00001	446
4421.36048	2.	R 4	1.420E-02	2.	1.429E-02	-.6	00021	00001	446
4422.11550	0.	R 5	1.660E-02	3.	1.678E-02	-1.1	00021	00001	446
4422.85668	0.	R 6	1.950E-02	2.	1.910E-02	2.1	00021	00001	446
4423.58403	2.	R 7	2.110E-02	2.	2.119E-02	-.4	00021	00001	446
4424.29749	0.	R 8	2.400E-02	2.	2.306E-02	3.9	00021	00001	446
4424.99711	0.	R 9	2.440E-02	5.	2.469E-02	-1.2	00021	00001	446
4425.68288	1.	R10	2.600E-02	3.	2.605E-02	-.2	00021	00001	446
4426.35475	-1.	R11	2.700E-02	2.	2.716E-02	-.6	00021	00001	446
4427.01278	0.	R12	2.780E-02	2.	2.800E-02	-.7	00021	00001	446
4427.65694	1.	R13	2.950E-02	2.	2.858E-02	3.1	00021	00001	446
4428.28720	0.	R14	2.950E-02	2.	2.890E-02	2.0	00021	00001	446
4428.90356	-2.	R15	3.020E-02	10.	2.899E-02	4.0	00021	00001	446
4429.50608	-1.	R16	2.900E-02	4.	2.884E-02	.6	00021	00001	446
4430.09468	-2.	R17	2.900E-02	3.	2.847E-02	1.8	00021	00001	446
4430.66942	0.	R18	2.850E-02	2.	2.791E-02	2.1	00021	00001	446
4431.23023	-2.	R19	2.770E-02	2.	2.718E-02	1.9	00021	00001	446
4431.77716	0.	R20	2.680E-02	2.	2.629E-02	1.9	00021	00001	446
4432.31018	0.	R21	2.560E-02	2.	2.527E-02	1.3	00021	00001	446
4432.82926	-4.	R22	2.360E-02	4.	2.414E-02	-2.3	00021	00001	446
4433.33451	1.	R23	2.200E-02	10.	2.293E-02	-4.2	00021	00001	446
4433.82578	-1.	R24	2.230E-02	2.	2.165E-02	2.9	00021	00001	446
4434.30315	0.	R25	2.050E-02	3.	2.032E-02	.9	00021	00001	446
4434.76660	0.	R26	2.000E-02	3.	1.898E-02	5.1	00021	00001	446
4435.21610	-1.	R27	1.800E-02	3.	1.762E-02	2.1	00021	00001	446
4435.65168	-3.	R28	1.600E-02	3.	1.628E-02	-1.7	00021	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c) %	band		
			observed	s%	computed		upper	lower	mol
4436.07337	1.	R29	1.550E-02	3.	1.496E-02	3.5	00021	00001	446
4436.48109	0.	R30	1.400E-02	2.	1.367E-02	2.3	00021	00001	446
4436.87486	-2.	R31	1.260E-02	5.	1.243E-02	1.3	00021	00001	446
4437.25474	2.	R32	1.167E-02	4.	1.125E-02	3.6	00021	00001	446
4437.62060	-2.	R33	9.880E-03	3.	1.013E-02	-2.5	00021	00001	446
4437.97256	-1.	R34	9.600E-03	10.	9.078E-03	5.4	00021	00001	446
4438.31056	-1.	R35	7.970E-03	5.	8.095E-03	-1.6	00021	00001	446
4438.63460	-1.	R36	7.030E-03	3.	7.183E-03	-2.2	00021	00001	446
4438.94470	1.	R37	6.150E-03	3.	6.344E-03	-3.2	00021	00001	446
4439.24081	-1.	R38	5.640E-03	3.	5.576E-03	1.1	00021	00001	446
4439.52299	2.	R39	5.000E-03	4.	4.878E-03	2.4	00021	00001	446
4439.79116	-1.	R40	4.300E-03	3.	4.248E-03	1.2	00021	00001	446
4440.04538	0.	R41	3.800E-03	3.	3.682E-03	3.1	00021	00001	446
4440.28567	4.	R42	3.150E-03	3.	3.176E-03	-.8	00021	00001	446
4440.51192	1.	R43	2.700E-03	3.	2.728E-03	-1.0	00021	00001	446
4440.72425	5.	R44	2.320E-03	3.	2.332E-03	-.5	00021	00001	446
4440.92249	-1.	R45	1.960E-03	3.	1.985E-03	-1.3	00021	00001	446
4441.10685	2.	R46	1.680E-03	3.	1.681E-03	-.1	00021	00001	446
4441.27718	1.	R47	1.430E-03	3.	1.418E-03	.8	00021	00001	446
4441.43351	0.	R48	1.210E-03	3.	1.191E-03	1.6	00021	00001	446
4441.57593	6.	R49	1.000E-03	3.	9.952E-04	.5	00021	00001	446
4441.70415	-8.	R50	8.300E-04	3.	8.282E-04	.2	00021	00001	446
4441.81865	6.	R51	6.800E-04	3.	6.862E-04	-.9	00021	00001	446
4441.85243	-14.	R66	2.230E-05	4.	2.425E-05	-8.7	00021	00001	446
4441.91883	-12.	R52	5.600E-04	3.	5.660E-04	-1.1	00021	00001	446
4442.07780	14.	R54	3.780E-04	3.	3.801E-04	-.6	00021	00001	446
4442.13594	-6.	R55	3.050E-04	3.	3.095E-04	-1.5	00021	00001	446
4649.85517	5.	P64	2.190E-05	3.	2.223E-05	-1.5	20011	00001	446
4651.53519	-2.	P63	2.730E-05	5.	2.846E-05	-4.3	20011	00001	446
4653.20275	2.	P62	3.630E-05	3.	3.629E-05	.0	20011	00001	446
4654.85764	-2.	P61	4.440E-05	3.	4.606E-05	-3.7	20011	00001	446
4658.12964	9.	P59	7.200E-05	3.	7.327E-05	-1.8	20011	00001	446
4662.94174	-9.	P56	1.490E-04	3.	1.422E-04	4.5	20011	00001	446
4664.52024	-5.	P55	1.760E-04	2.	1.759E-04	.1	20011	00001	446
4666.08587	1.	P54	2.180E-04	2.	2.165E-04	.7	20011	00001	446
4667.63852	0.	P53	2.680E-04	3.	2.654E-04	1.0	20011	00001	446
4669.17829	6.	P52	3.280E-04	3.	3.238E-04	1.3	20011	00001	446
4672.21865	-1.	P50	4.780E-04	3.	4.757E-04	.5	20011	00001	446
4673.71933	1.	P49	5.800E-04	3.	5.727E-04	1.3	20011	00001	446
4675.20688	-2.	P48	6.840E-04	3.	6.865E-04	-.4	20011	00001	446
4676.68136	-2.	P47	8.160E-04	3.	8.190E-04	-.4	20011	00001	446
4678.14271	-1.	P46	9.730E-04	3.	9.728E-04	.0	20011	00001	446
4679.59092	2.	P45	1.120E-03	3.	1.150E-03	-2.7	20011	00001	446
4681.02594	4.	P44	1.350E-03	3.	1.354E-03	-.3	20011	00001	446
4682.44769	2.	P43	1.560E-03	3.	1.586E-03	-1.6	20011	00001	446
4683.85620	-1.	P42	1.820E-03	3.	1.849E-03	-1.6	20011	00001	446
4685.25151	3.	P41	2.110E-03	3.	2.146E-03	-1.7	20011	00001	446
4686.63360	12.	P40	2.500E-03	10.	2.479E-03	.8	20011	00001	446
4688.00212	-4.	P39	2.900E-03	4.	2.850E-03	1.7	20011	00001	446
4690.69952	2.	P37	3.770E-03	3.	3.714E-03	1.5	20011	00001	446
4692.02814	1.	P36	4.100E-03	4.	4.209E-03	-2.7	20011	00001	446
4694.64521	2.	P34	5.310E-03	4.	5.328E-03	-.3	20011	00001	446
4695.93357	-1.	P33	5.920E-03	3.	5.950E-03	-.5	20011	00001	446
4697.20853	0.	P32	6.870E-03	3.	6.611E-03	3.8	20011	00001	446
4698.47001	0.	P31	7.000E-03	3.	7.309E-03	-4.4	20011	00001	446
4699.71799	-1.	P30	8.250E-03	3.	8.039E-03	2.6	20011	00001	446
4700.95250	-1.	P29	8.600E-03	3.	8.795E-03	-2.3	20011	00001	446
4702.17349	-1.	P28	9.200E-03	3.	9.572E-03	-4.0	20011	00001	446
4703.38096	1.	P27	1.100E-02	5.	1.036E-02	5.8	20011	00001	446
4704.57487	0.	P26	1.160E-02	3.	1.116E-02	3.8	20011	00001	446
4705.75522	-1.	P25	1.200E-02	4.	1.194E-02	.5	20011	00001	446
4706.92200	-2.	P24	1.320E-02	3.	1.271E-02	3.7	20011	00001	446
4708.07523	1.	P23	1.350E-02	3.	1.345E-02	.3	20011	00001	446
4709.21480	-2.	P22	1.410E-02	3.	1.415E-02	-.4	20011	00001	446
4710.34079	-1.	P21	1.480E-02	4.	1.480E-02	.0	20011	00001	446
4711.45317	-1.	P20	1.570E-02	3.	1.537E-02	2.1	20011	00001	446
4712.55192	0.	P19	1.660E-02	3.	1.586E-02	4.4	20011	00001	446
4713.63700	0.	P18	1.630E-02	3.	1.626E-02	.3	20011	00001	446
4714.70847	3.	P17	1.670E-02	3.	1.654E-02	.9	20011	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)%	band		
			observed	s%	computed		upper	lower	mol
4715.76619	-3.	P16	1.620E-02	5.	1.670E-02	-3.1	20011	00001	446
4716.81031	0.	P15	1.730E-02	3.	1.673E-02	3.3	20011	00001	446
4717.84071	-1.	P14	1.640E-02	3.	1.662E-02	-1.4	20011	00001	446
4718.85743	0.	P13	1.630E-02	3.	1.636E-02	-.4	20011	00001	446
4719.86044	-1.	P12	1.540E-02	3.	1.594E-02	-3.5	20011	00001	446
4720.84974	-1.	P11	1.460E-02	5.	1.536E-02	-5.2	20011	00001	446
4721.82533	0.	P10	1.550E-02	5.	1.461E-02	5.7	20011	00001	446
4722.78718	-1.	P 9	1.400E-02	3.	1.371E-02	2.1	20011	00001	446
4723.73530	0.	P 8	1.290E-02	3.	1.265E-02	1.9	20011	00001	446
4724.66969	1.	P 7	1.150E-02	3.	1.145E-02	.4	20011	00001	446
4725.59029	-2.	P 6	1.020E-02	3.	1.011E-02	.9	20011	00001	446
4726.49717	-2.	P 5	8.900E-03	3.	8.637E-03	3.0	20011	00001	446
4728.26963	-1.	P 3	5.250E-03	3.	5.383E-03	-2.5	20011	00001	446
4729.13514	-9.	P 2	3.570E-03	3.	3.635E-03	-1.8	20011	00001	446
4729.98705	2.	P 1	1.820E-03	3.	1.834E-03	-.7	20011	00001	446
4731.64929	0.	R 0	1.800E-03	2.	1.843E-03	-2.4	20011	00001	446
4732.45974	1.	R 1	3.650E-03	3.	3.673E-03	-.6	20011	00001	446
4733.25636	-3.	R 2	5.500E-03	4.	5.467E-03	.6	20011	00001	446
4734.80832	1.	R 4	8.750E-03	3.	8.863E-03	-1.3	20011	00001	446
4735.56358	1.	R 5	1.000E-02	3.	1.042E-02	-4.2	20011	00001	446
4736.30504	1.	R 6	1.250E-02	5.	1.187E-02	5.0	20011	00001	446
4737.03268	-1.	R 7	1.300E-02	4.	1.319E-02	-1.5	20011	00001	446
4737.74653	0.	R 8	1.450E-02	3.	1.437E-02	.9	20011	00001	446
4738.44658	1.	R 9	1.600E-02	2.	1.539E-02	3.8	20011	00001	446
4739.13281	1.	R10	1.610E-02	3.	1.626E-02	-1.0	20011	00001	446
4739.80521	-1.	R11	1.730E-02	2.	1.696E-02	2.0	20011	00001	446
4740.46384	1.	R12	1.730E-02	3.	1.750E-02	-1.1	20011	00001	446
4741.10861	-3.	R13	1.830E-02	3.	1.787E-02	2.3	20011	00001	446
4741.73969	5.	R14	1.800E-02	3.	1.809E-02	-.5	20011	00001	446
4742.35684	2.	R15	1.870E-02	3.	1.815E-02	3.0	20011	00001	446
4742.96023	2.	R16	1.800E-02	3.	1.806E-02	-.4	20011	00001	446
4743.54980	1.	R17	1.780E-02	3.	1.784E-02	-.3	20011	00001	446
4744.12556	-1.	R18	1.730E-02	3.	1.750E-02	-1.2	20011	00001	446
4744.68754	-1.	R19	1.670E-02	3.	1.705E-02	-2.1	20011	00001	446
4745.23573	-1.	R20	1.620E-02	3.	1.650E-02	-1.8	20011	00001	446
4745.77014	1.	R21	1.540E-02	3.	1.586E-02	-3.0	20011	00001	446
4746.29074	0.	R22	1.510E-02	3.	1.516E-02	-.4	20011	00001	446
4746.79756	-1.	R23	1.460E-02	3.	1.440E-02	1.4	20011	00001	446
4747.29065	4.	R24	1.360E-02	3.	1.359E-02	.0	20011	00001	446
4747.76993	6.	R25	1.290E-02	4.	1.276E-02	1.1	20011	00001	446
4748.23540	2.	R26	1.170E-02	3.	1.192E-02	-1.9	20011	00001	446
4748.68713	1.	R27	1.060E-02	4.	1.107E-02	-4.4	20011	00001	446
4749.12509	-1.	R28	9.600E-03	5.	1.022E-02	-6.5	20011	00001	446
4749.95982	-2.	R30	8.580E-03	3.	8.583E-03	.0	20011	00001	446
4750.35654	-7.	R31	7.500E-03	5.	7.804E-03	-4.1	20011	00001	446
4750.73964	-2.	R32	7.000E-03	4.	7.060E-03	-.9	20011	00001	446
4751.10899	0.	R33	6.250E-03	4.	6.355E-03	-1.7	20011	00001	446
4751.46462	0.	R34	5.600E-03	3.	5.692E-03	-1.6	20011	00001	446
4751.80658	2.	R35	5.000E-03	3.	5.073E-03	-1.5	20011	00001	446
4752.13481	0.	R36	4.500E-03	3.	4.500E-03	.0	20011	00001	446
4752.44937	-3.	R37	3.950E-03	3.	3.972E-03	-.5	20011	00001	446
4752.75035	1.	R38	3.470E-03	3.	3.489E-03	-.5	20011	00001	446
4753.03764	2.	R39	3.100E-03	3.	3.050E-03	1.6	20011	00001	446
4753.31128	0.	R40	2.660E-03	3.	2.654E-03	.2	20011	00001	446
4753.57135	3.	R41	2.300E-03	3.	2.299E-03	.1	20011	00001	446
4753.81777	-1.	R42	2.000E-03	3.	1.982E-03	.9	20011	00001	446
4754.05064	0.	R43	1.700E-03	3.	1.700E-03	.0	20011	00001	446
4754.26994	0.	R44	1.520E-03	3.	1.452E-03	4.4	20011	00001	446
4754.47576	7.	R45	1.250E-03	3.	1.235E-03	1.2	20011	00001	446
4754.66795	3.	R46	1.060E-03	3.	1.045E-03	1.4	20011	00001	446
4754.84662	-2.	R47	8.970E-04	3.	8.805E-04	1.8	20011	00001	446
4755.01187	1.	R48	7.300E-04	3.	7.385E-04	-1.2	20011	00001	446
4954.94218	2.	P63	2.180E-06	10.	2.397E-06	-9.9	32001	00001	446
4966.19520	-4.	P55	1.550E-05	10.	1.400E-05	9.7	32001	00001	446
4968.90348	-12.	P53	2.050E-05	2.	2.086E-05	-1.7	32001	00001	446
4970.24214	-5.	P52	2.600E-05	2.	2.529E-05	2.7	32001	00001	446
4972.88849	11.	P50	3.660E-05	2.	3.671E-05	-.3	32001	00001	446
4975.49328	-14.	P48	5.100E-05	2.	5.235E-05	-2.7	32001	00001	446
4978.05756	-2.	P46	7.201E-05	2.	7.336E-05	-1.9	32001	00001	446

Table 5. continued

observed position	o-c	line	strength-			(o-c)†	band		
			observed	st	computed		upper	lower	mol
4981.82774	0.	P43	1.170E-04	2.	1.177E-04	-6	32001	00001	446
4983.06433	3.	P42	1.410E-04	3.	1.365E-04	3.2	32001	00001	446
4984.29085	2.	P41	1.560E-04	1.	1.577E-04	-1.1	32001	00001	446
4985.50742	4.	P40	1.850E-04	2.	1.813E-04	2.0	32001	00001	446
4987.91064	0.	P38	2.420E-04	1.	2.363E-04	2.3	32001	00001	446
4989.09747	6.	P37	2.620E-04	2.	2.680E-04	-2.3	32001	00001	446
4990.27437	5.	P36	2.970E-04	2.	3.024E-04	-1.8	32001	00001	446
4991.44149	7.	P35	3.350E-04	2.	3.396E-04	-1.4	32001	00001	446
4992.59871	0.	P34	3.850E-04	2.	3.796E-04	1.4	32001	00001	446
4993.74624	0.	P33	4.660E-04	10.	4.222E-04	9.4	32001	00001	446
4996.01219	5.	P31	5.080E-04	2.	5.147E-04	-1.3	32001	00001	446
4997.13060	4.	P30	5.400E-04	2.	5.641E-04	-4.5	32001	00001	446
4999.33853	0.	P28	6.720E-04	2.	6.672E-04	.7	32001	00001	446
5000.42812	0.	P27	7.320E-04	2.	7.199E-04	1.7	32001	00001	446
5001.50814	-2.	P26	7.750E-04	2.	7.726E-04	.3	32001	00001	446
5002.57865	-2.	P25	8.440E-04	2.	8.247E-04	2.3	32001	00001	446
5003.63965	-3.	P24	8.970E-04	2.	8.754E-04	2.4	32001	00001	446
5004.69119	-2.	P23	9.370E-04	2.	9.240E-04	1.4	32001	00001	446
5005.73326	-2.	P22	9.820E-04	2.	9.694E-04	1.3	32001	00001	446
5006.76591	-1.	P21	1.020E-03	2.	1.011E-03	.9	32001	00001	446
5007.78914	-2.	P20	1.030E-03	2.	1.048E-03	-1.7	32001	00001	446
5008.80303	1.	P19	1.100E-03	3.	1.079E-03	1.9	32001	00001	446
5009.80748	-2.	P18	1.130E-03	3.	1.104E-03	2.3	32001	00001	446
5010.80264	0.	P17	1.160E-03	3.	1.121E-03	3.4	32001	00001	446
5011.78843	-3.	P16	1.140E-03	2.	1.130E-03	.9	32001	00001	446
5012.76491	-5.	P15	1.130E-03	2.	1.130E-03	.0	32001	00001	446
5013.73214	-3.	P14	1.130E-03	2.	1.120E-03	.8	32001	00001	446
5014.69008	-1.	P13	1.110E-03	3.	1.101E-03	.8	32001	00001	446
5015.63874	-1.	P12	1.080E-03	2.	1.071E-03	.8	32001	00001	446
5016.57815	-1.	P11	1.020E-03	1.	1.031E-03	-1.1	32001	00001	446
5017.50831	0.	P10	9.700E-04	2.	9.802E-04	-1.0	32001	00001	446
5018.42923	-1.	P 9	9.170E-04	2.	9.188E-04	-.2	32001	00001	446
5019.34101	8.	P 8	8.500E-04	2.	8.473E-04	.3	32001	00001	446
5021.13669	1.	P 6	6.600E-04	2.	6.758E-04	-2.4	32001	00001	446
5022.02077	3.	P 5	5.600E-04	2.	5.773E-04	-3.1	32001	00001	446
5022.89562	4.	P 4	4.640E-04	2.	4.715E-04	-1.6	32001	00001	446
5023.76123	0.	P 3	3.500E-04	2.	3.596E-04	-2.8	32001	00001	446
5024.61766	-1.	P 2	2.360E-04	1.	2.428E-04	-2.9	32001	00001	446
5025.46500	10.	P 1	1.290E-04	3.	1.225E-04	5.0	32001	00001	446
5027.13177	4.	R 0	1.220E-04	1.	1.232E-04	-1.0	32001	00001	446
5029.56283	3.	R 3	4.720E-04	2.	4.824E-04	-2.2	32001	00001	446
5030.35470	2.	R 4	5.750E-04	2.	5.939E-04	-3.3	32001	00001	446
5031.13733	2.	R 5	6.850E-04	2.	6.993E-04	-2.1	32001	00001	446
5031.91067	1.	R 6	8.020E-04	2.	7.972E-04	.6	32001	00001	446
5032.67473	-1.	R 7	8.800E-04	2.	8.868E-04	-.8	32001	00001	446
5033.42952	1.	R 8	9.800E-04	3.	9.671E-04	1.3	32001	00001	446
5034.17497	-1.	R 9	1.050E-03	2.	1.038E-03	1.2	32001	00001	446
5034.91111	1.	R10	1.070E-03	2.	1.098E-03	-2.6	32001	00001	446
5035.63787	-1.	R11	1.160E-03	2.	1.147E-03	1.1	32001	00001	446
5036.35526	-2.	R12	1.180E-03	2.	1.186E-03	-.5	32001	00001	446
5037.06327	-2.	R13	1.200E-03	2.	1.213E-03	-1.1	32001	00001	446
5037.76185	-3.	R14	1.240E-03	2.	1.230E-03	.8	32001	00001	446
5039.13067	-4.	R16	1.240E-03	2.	1.234E-03	.5	32001	00001	446
5039.80085	-4.	R17	1.240E-03	2.	1.222E-03	1.4	32001	00001	446
5040.46154	-1.	R18	1.220E-03	2.	1.202E-03	1.5	32001	00001	446
5041.11264	-3.	R19	1.170E-03	3.	1.174E-03	-.3	32001	00001	446
5041.75420	0.	R20	1.110E-03	2.	1.139E-03	-2.6	32001	00001	446
5042.38610	-2.	R21	1.120E-03	2.	1.098E-03	1.9	32001	00001	446
5043.00838	-2.	R22	1.050E-03	2.	1.053E-03	-.3	32001	00001	446
5044.81704	0.	R25	8.800E-04	3.	8.954E-04	-1.8	32001	00001	446
5045.40043	2.	R26	8.450E-04	3.	8.390E-04	.7	32001	00001	446
5045.97395	-1.	R27	8.000E-04	3.	7.819E-04	2.3	32001	00001	446
5046.53768	2.	R28	7.390E-04	2.	7.249E-04	1.9	32001	00001	446
5047.09150	3.	R29	6.860E-04	2.	6.686E-04	2.5	32001	00001	446
5047.63538	3.	R30	6.340E-04	2.	6.135E-04	3.2	32001	00001	446
5048.16927	0.	R31	5.630E-04	2.	5.602E-04	.5	32001	00001	446
5049.20707	3.	R33	4.500E-04	3.	4.601E-04	-2.2	32001	00001	446
5049.71083	2.	R34	3.950E-04	2.	4.139E-04	-4.8	32001	00001	446
5050.20449	2.	R35	3.750E-04	3.	3.706E-04	1.2	32001	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)†	band		
			observed	s‡	computed		upper	lower	mol
5051.16122	1.	R37	2.960E-04	3.	2.929E-04	1.0	32001	00001	446
5051.62419	-5.	R38	2.540E-04	2.	2.586E-04	-1.8	32001	00001	446
5052.07696	-1.	R39	2.270E-04	2.	2.272E-04	-.1	32001	00001	446
5052.51937	0.	R40	1.970E-04	1.	1.987E-04	-.9	32001	00001	446
5052.95139	0.	R41	1.750E-04	2.	1.730E-04	1.1	32001	00001	446
5053.37301	1.	R42	1.480E-04	2.	1.500E-04	-1.3	32001	00001	446
5053.78412	-3.	R43	1.290E-04	1.	1.294E-04	-.3	32001	00001	446
5053.84741	5.	P47	5.280E-05	1.	5.114E-05	3.2	40001	00001	446
5054.18474	-6.	R44	1.100E-04	2.	1.111E-04	-1.0	32001	00001	446
5054.57484	-7.	R45	9.360E-05	2.	9.504E-05	-1.5	32001	00001	446
5055.19734	12.	P46	6.370E-05	1.	6.101E-05	4.2	40001	00001	446
5056.02897	-15.	R49	4.900E-05	2.	4.861E-05	-.8	32001	00001	446
5056.36581	-10.	R50	3.950E-05	4.	4.066E-05	-2.9	32001	00001	446
5056.53752	-4.	P45	7.400E-05	2.	7.246E-05	2.1	40001	00001	446
5056.69204	11.	R51	3.600E-05	10.	3.386E-05	5.9	32001	00001	446
5057.00704	-7.	R52	2.740E-05	1.	2.807E-05	-2.5	32001	00001	446
5059.18917	-3.	P43	1.010E-04	2.	1.008E-04	.2	40001	00001	446
5060.50024	-2.	P42	1.180E-04	1.	1.180E-04	.0	40001	00001	446
5061.80136	1.	P41	1.410E-04	1.	1.375E-04	2.5	40001	00001	446
5063.09233	-3.	P40	1.600E-04	1.	1.594E-04	.4	40001	00001	446
5064.37317	-3.	P39	1.880E-04	2.	1.840E-04	2.1	40001	00001	446
5065.64376	0.	P38	2.100E-04	2.	2.113E-04	-.6	40001	00001	446
5066.90393	-2.	P37	2.460E-04	1.	2.415E-04	1.8	40001	00001	446
5068.15368	-1.	P36	2.790E-04	2.	2.747E-04	1.6	40001	00001	446
5069.39287	-3.	P35	3.140E-04	2.	3.108E-04	1.0	40001	00001	446
5070.62149	0.	P34	3.500E-04	1.	3.500E-04	-.0	40001	00001	446
5071.83938	0.	P33	3.900E-04	2.	3.921E-04	-.5	40001	00001	446
5073.04649	-2.	P32	4.409E-04	2.	4.370E-04	.9	40001	00001	446
5074.24279	0.	P31	4.830E-04	2.	4.846E-04	-.3	40001	00001	446
5075.42816	0.	P30	5.340E-04	2.	5.345E-04	-.1	40001	00001	446
5076.60258	2.	P29	5.950E-04	1.	5.864E-04	1.4	40001	00001	446
5078.91819	1.	P27	7.040E-04	1.	6.945E-04	1.3	40001	00001	446
5080.05929	0.	P26	7.560E-04	1.	7.495E-04	.9	40001	00001	446
5081.18920	1.	P25	8.100E-04	1.	8.044E-04	.7	40001	00001	446
5082.30782	-1.	P24	8.770E-04	2.	8.582E-04	2.1	40001	00001	446
5083.41515	1.	P23	9.000E-04	2.	9.103E-04	-.1.1	40001	00001	446
5084.51110	1.	P22	9.680E-04	2.	9.596E-04	.9	40001	00001	446
5085.59565	1.	P21	1.010E-03	2.	1.005E-03	.5	40001	00001	446
5086.66875	2.	P20	1.040E-03	2.	1.046E-03	-.6	40001	00001	446
5087.73033	-1.	P19	1.110E-03	2.	1.082E-03	2.5	40001	00001	446
5088.78042	1.	P18	1.130E-03	2.	1.111E-03	1.7	40001	00001	446
5089.81891	0.	P17	1.140E-03	2.	1.132E-03	.7	40001	00001	446
5090.84581	-1.	P16	1.120E-03	1.	1.145E-03	-2.2	40001	00001	446
5091.86107	0.	P15	1.130E-03	1.	1.149E-03	-1.7	40001	00001	446
5092.86467	0.	P14	1.110E-03	1.	1.143E-03	-2.9	40001	00001	446
5093.85658	2.	P13	1.130E-03	2.	1.126E-03	.4	40001	00001	446
5094.83672	-2.	P12	1.090E-03	1.	1.098E-03	-.8	40001	00001	446
5095.80515	-2.	P11	1.040E-03	1.	1.060E-03	-1.9	40001	00001	446
5096.76181	0.	P10	1.000E-03	2.	1.009E-03	-.9	40001	00001	446
5097.70668	1.	P 9	9.480E-04	2.	9.481E-04	-.0	40001	00001	446
5098.63972	1.	P 8	8.930E-04	2.	8.757E-04	1.9	40001	00001	446
5099.56092	0.	P 7	8.040E-04	2.	7.930E-04	1.4	40001	00001	446
5100.47029	1.	P 6	6.950E-04	1.	7.004E-04	-.8	40001	00001	446
5101.36778	0.	P 5	5.960E-04	1.	5.989E-04	-.5	40001	00001	446
5102.25338	-1.	P 4	4.910E-04	1.	4.896E-04	.3	40001	00001	446
5103.12710	-2.	P 3	3.760E-04	2.	3.737E-04	.6	40001	00001	446
5103.98897	1.	P 2	2.510E-04	2.	2.524E-04	-.6	40001	00001	446
5104.83890	0.	P 1	1.240E-04	2.	1.274E-04	-2.7	40001	00001	446
5106.50295	-7.	R 0	1.250E-04	3.	1.281E-04	-2.5	40001	00001	446
5107.31709	-12.	R 1	2.500E-04	2.	2.552E-04	-2.1	40001	00001	446
5108.11949	1.	R 2	3.790E-04	2.	3.799E-04	-.2	40001	00001	446
5108.90987	3.	R 3	4.950E-04	1.	5.005E-04	-1.1	40001	00001	446
5109.68827	-1.	R 4	6.030E-04	2.	6.156E-04	-2.1	40001	00001	446
5110.45481	0.	R 5	7.250E-04	2.	7.239E-04	-.2	40001	00001	446
5111.20943	-1.	R 6	8.340E-04	2.	8.241E-04	1.2	40001	00001	446
5111.95215	-2.	R 7	9.040E-04	2.	9.151E-04	-1.2	40001	00001	446
5112.68300	-1.	R 8	1.000E-03	2.	9.962E-04	.4	40001	00001	446
5113.40199	0.	R 9	1.060E-03	2.	1.067E-03	-.6	40001	00001	446
5114.10910	1.	R10	1.120E-03	2.	1.126E-03	-.5	40001	00001	446

Table 5. continued

observed position	o-c	line	strength			band			
			observed	s*	computed	(o-c)*	upper	lower	mol
5114.80436	1.	R11	1.190E-03	2.	1.173E-03	1.4	40001	00001	446
5115.48780	2.	R12	1.220E-03	2.	1.210E-03	.9	40001	00001	446
5116.15943	3.	R13	1.250E-03	2.	1.234E-03	1.3	40001	00001	446
5116.81924	0.	R14	1.200E-03	2.	1.248E-03	-4.0	40001	00001	446
5117.46729	0.	R15	1.250E-03	2.	1.251E-03	.0	40001	00001	446
5118.10363	1.	R16	1.230E-03	2.	1.243E-03	-1.1	40001	00001	446
5118.72821	0.	R17	1.210E-03	1.	1.226E-03	-1.4	40001	00001	446
5119.94238	-1.	R19	1.170E-03	1.	1.168E-03	.1	40001	00001	446
5120.53205	4.	R20	1.150E-03	2.	1.129E-03	1.9	40001	00001	446
5121.11008	3.	R21	1.090E-03	2.	1.083E-03	.6	40001	00001	446
5121.67656	1.	R22	1.030E-03	2.	1.033E-03	-.3	40001	00001	446
5122.23150	-3.	R23	9.940E-04	2.	9.798E-04	1.4	40001	00001	446
5122.77502	-1.	R24	9.330E-04	1.	9.234E-04	1.0	40001	00001	446
5123.30706	-4.	R25	8.650E-04	2.	8.653E-04	.0	40001	00001	446
5123.82782	2.	R26	8.100E-04	2.	8.062E-04	-.5	40001	00001	446
5124.33718	1.	R27	7.400E-04	2.	7.470E-04	-.9	40001	00001	446
5124.83525	-1.	R28	6.700E-04	2.	6.883E-04	-2.7	40001	00001	446
5125.32210	-2.	R29	6.300E-04	2.	6.309E-04	-.1	40001	00001	446
5125.79784	2.	R30	5.750E-04	2.	5.752E-04	.0	40001	00001	446
5126.26243	2.	R31	5.400E-04	1.	5.216E-04	3.4	40001	00001	446
5126.71596	0.	R32	4.700E-04	1.	4.707E-04	-.1	40001	00001	446
5127.15852	0.	R33	4.300E-04	3.	4.225E-04	1.7	40001	00001	446
5127.59020	2.	R34	3.830E-04	2.	3.773E-04	1.5	40001	00001	446
5128.01100	-1.	R35	3.310E-04	2.	3.353E-04	-1.3	40001	00001	446
5128.42107	1.	R36	2.930E-04	2.	2.965E-04	-1.2	40001	00001	446
5129.20918	-4.	R38	2.260E-04	1.	2.284E-04	-1.1	40001	00001	446
5129.58757	8.	R39	1.990E-04	1.	1.991E-04	.0	40001	00001	446
5129.95529	-4.	R40	1.700E-04	2.	1.726E-04	-1.5	40001	00001	446
5130.31285	0.	R41	1.470E-04	2.	1.490E-04	-1.3	40001	00001	446
5130.66014	0.	R42	1.260E-04	1.	1.280E-04	-1.6	40001	00001	446
5130.99735	5.	R43	1.100E-04	2.	1.094E-04	.5	40001	00001	446
5131.32447	3.	R44	9.330E-05	2.	9.308E-05	.2	40001	00001	446
5131.64169	2.	R45	7.880E-05	1.	7.883E-05	.0	40001	00001	446
5131.94904	-7.	R46	6.750E-05	2.	6.645E-05	1.6	40001	00001	446
5132.24674	-14.	R47	5.830E-05	2.	5.575E-05	4.4	40001	00001	446
5132.81376	-14.	R49	3.720E-05	1.	3.871E-05	-4.0	40001	00001	446
5133.08349	6.	R50	3.270E-05	2.	3.203E-05	2.1	40001	00001	446
5133.59536	12.	R52	2.320E-05	5.	2.163E-05	6.8	40001	00001	446
5134.92418	8.	R58	6.040E-06	5.	5.977E-06	1.0	40001	00001	446
5135.48125	0.	R61	3.180E-06	10.	2.957E-06	7.0	40001	00001	446
5581.93731	12.	P51	1.040E-05	5.	1.053E-05	-1.3	10021	00001	446
5585.32028	-8.	P49	1.520E-05	5.	1.524E-05	-.2	10021	00001	446
5588.63544	1.	P47	2.130E-05	5.	2.165E-05	-1.6	10021	00001	446
5590.26747	8.	P46	2.550E-05	5.	2.563E-05	-.5	10021	00001	446
5591.88217	-12.	P45	3.060E-05	5.	3.021E-05	1.3	10021	00001	446
5593.48020	8.	P44	3.590E-05	5.	3.545E-05	1.2	10021	00001	446
5596.62443	-6.	P42	4.820E-05	5.	4.814E-05	.1	10021	00001	446
5598.17104	2.	P41	5.630E-05	5.	5.571E-05	1.0	10021	00001	446
5599.70041	-3.	P40	6.280E-05	5.	6.417E-05	-2.2	10021	00001	446
5601.21277	5.	P39	7.740E-05	1.	7.357E-05	4.9	10021	00001	446
5602.70793	6.	P38	8.650E-05	1.	8.396E-05	2.9	10021	00001	446
5604.18586	1.	P37	9.370E-05	1.	9.535E-05	-1.8	10021	00001	446
5605.64666	-2.	P36	1.100E-04	2.	1.078E-04	2.0	10021	00001	446
5607.09037	2.	P35	1.210E-04	1.	1.212E-04	-.2	10021	00001	446
5608.51680	-3.	P34	1.370E-04	2.	1.357E-04	1.0	10021	00001	446
5609.92610	-3.	P33	1.540E-04	3.	1.511E-04	1.9	10021	00001	446
5611.31823	0.	P32	1.690E-04	2.	1.675E-04	.9	10021	00001	446
5612.69314	2.	P31	1.830E-04	1.	1.847E-04	-.9	10021	00001	446
5614.05087	8.	P30	2.060E-04	3.	2.026E-04	1.6	10021	00001	446
5615.39137	13.	P29	2.180E-04	1.	2.212E-04	-1.4	10021	00001	446
5616.71448	1.	P28	2.360E-04	4.	2.401E-04	-1.7	10021	00001	446
5618.02043	-2.	P27	2.660E-04	5.	2.593E-04	2.5	10021	00001	446
5619.30918	0.	P26	2.790E-04	5.	2.785E-04	.2	10021	00001	446
5620.58062	-4.	P25	2.980E-04	5.	2.975E-04	.2	10021	00001	446
5621.83484	-4.	P24	3.100E-04	5.	3.159E-04	-1.9	10021	00001	446
5623.07182	-1.	P23	3.300E-04	5.	3.336E-04	-1.1	10021	00001	446
5624.29147	-2.	P22	3.520E-04	5.	3.502E-04	.5	10021	00001	446
5625.49385	-2.	P21	3.660E-04	5.	3.653E-04	.2	10021	00001	446
5626.67903	6.	P20	3.800E-04	4.	3.787E-04	.3	10021	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)%	band		
			observed	s*	computed		upper	lower	mol
5627.84677	0.	P19	3.830E-04	5.	3.900E-04	-1.8	10021	00001	446
5630.13044	1.	P17	3.980E-04	5.	4.050E-04	-1.8	10021	00001	446
5631.24629	-1.	P16	4.080E-04	5.	4.082E-04	-.1	10021	00001	446
5632.34481	-2.	P15	4.100E-04	5.	4.082E-04	.4	10021	00001	446
5633.42604	0.	P14	4.040E-04	5.	4.046E-04	-.2	10021	00001	446
5634.48992	1.	P13	3.950E-04	5.	3.975E-04	-.6	10021	00001	446
5635.53641	-3.	P12	3.840E-04	5.	3.865E-04	-.7	10021	00001	446
5636.56560	-2.	P11	3.660E-04	5.	3.718E-04	-1.6	10021	00001	446
5637.57746	1.	P10	3.570E-04	5.	3.532E-04	1.1	10021	00001	446
5638.57194	2.	P 9	3.250E-04	5.	3.308E-04	-1.8	10021	00001	446
5639.54907	5.	P 8	3.030E-04	5.	3.048E-04	-.6	10021	00001	446
5640.50874	-3.	P 7	2.800E-04	5.	2.753E-04	1.7	10021	00001	446
5641.45110	-3.	P 6	2.400E-04	5.	2.426E-04	-1.1	10021	00001	446
5642.37611	0.	P 5	2.020E-04	5.	2.070E-04	-2.5	10021	00001	446
5643.28371	0.	P 4	1.700E-04	5.	1.689E-04	.7	10021	00001	446
5644.17392	-1.	P 3	1.290E-04	5.	1.286E-04	.3	10021	00001	446
5645.90220	3.	P 1	4.330E-05	5.	4.369E-05	-.9	10021	00001	446
5647.56081	0.	R 0	4.190E-05	1.	4.380E-05	-4.5	10021	00001	446
5648.36404	2.	R 1	8.650E-05	1.	8.716E-05	-.8	10021	00001	446
5649.14982	2.	R 2	1.290E-04	2.	1.296E-04	-.4	10021	00001	446
5649.91818	1.	R 3	1.700E-04	2.	1.705E-04	-.3	10021	00001	446
5650.66914	1.	R 4	2.110E-04	5.	2.095E-04	.7	10021	00001	446
5651.40267	1.	R 5	2.480E-04	5.	2.462E-04	.7	10021	00001	446
5652.11874	-1.	R 6	2.780E-04	5.	2.800E-04	-.7	10021	00001	446
5652.81745	3.	R 7	3.090E-04	5.	3.108E-04	-.6	10021	00001	446
5653.49862	-3.	R 8	3.340E-04	5.	3.381E-04	-1.2	10021	00001	446
5654.16242	-2.	R 9	3.570E-04	5.	3.618E-04	-1.4	10021	00001	446
5654.80881	2.	R10	3.790E-04	5.	3.818E-04	-.7	10021	00001	446
5655.43769	-1.	R11	3.960E-04	5.	3.979E-04	-.5	10021	00001	446
5656.04912	-3.	R12	4.070E-04	5.	4.101E-04	-.8	10021	00001	446
5656.64316	0.	R13	4.260E-04	5.	4.186E-04	1.7	10021	00001	446
5657.21968	-4.	R14	4.190E-04	5.	4.232E-04	-1.0	10021	00001	446
5657.77882	1.	R15	4.210E-04	5.	4.243E-04	-.8	10021	00001	446
5658.32045	-1.	R16	4.250E-04	5.	4.220E-04	.7	10021	00001	446
5658.84464	0.	R17	4.200E-04	5.	4.166E-04	-.8	10021	00001	446
5659.35137	1.	R18	4.070E-04	5.	4.083E-04	-.3	10021	00001	446
5659.84061	-1.	R19	3.990E-04	5.	3.974E-04	.4	10021	00001	446
5660.31241	0.	R20	3.860E-04	5.	3.843E-04	.4	10021	00001	446
5660.76672	-2.	R21	3.780E-04	5.	3.693E-04	2.3	10021	00001	446
5661.20360	0.	R22	3.560E-04	5.	3.526E-04	.9	10021	00001	446
5661.62299	-1.	R23	3.370E-04	5.	3.348E-04	.7	10021	00001	446
5662.02493	1.	R24	3.190E-04	5.	3.160E-04	.9	10021	00001	446
5662.40936	-1.	R25	2.940E-04	5.	2.965E-04	-.9	10021	00001	446
5662.77634	-1.	R26	2.780E-04	5.	2.768E-04	.4	10021	00001	446
5663.12587	2.	R27	2.660E-04	5.	2.569E-04	3.4	10021	00001	446
5663.45789	0.	R28	2.370E-04	5.	2.372E-04	-.1	10021	00001	446
5663.77245	0.	R29	2.220E-04	5.	2.178E-04	1.9	10021	00001	446
5664.06955	1.	R30	2.060E-04	5.	1.990E-04	3.4	10021	00001	446
5664.34914	-2.	R31	1.790E-04	5.	1.809E-04	-1.1	10021	00001	446
5664.61130	0.	R32	1.600E-04	5.	1.636E-04	-2.3	10021	00001	446
5664.85587	-10.	R33	1.450E-04	5.	1.473E-04	-1.6	10021	00001	446
5909.54380	-9.	P52	7.470E-06	5.	7.152E-06	4.3	30011	00001	446
5912.84836	1.	P50	1.020E-05	5.	1.058E-05	-3.7	30011	00001	446
5914.47795	-13.	P49	1.250E-05	5.	1.278E-05	-2.2	30011	00001	446
5916.09280	8.	P48	1.510E-05	5.	1.536E-05	-1.7	30011	00001	446
5919.27652	15.	P46	2.170E-05	5.	2.190E-05	-.9	30011	00001	446
5920.84517	-5.	P45	2.570E-05	5.	2.597E-05	-1.1	30011	00001	446
5922.39882	14.	P44	3.000E-05	5.	3.066E-05	-2.2	30011	00001	446
5923.93675	9.	P43	3.490E-05	5.	3.602E-05	-3.2	30011	00001	446
5925.45917	5.	P42	4.210E-05	5.	4.212E-05	.0	30011	00001	446
5926.96591	-6.	P41	4.750E-05	5.	4.902E-05	-3.2	30011	00001	446
5931.39238	-9.	P38	7.380E-05	5.	7.509E-05	-1.7	30011	00001	446
5932.83628	-14.	P37	8.270E-05	5.	8.573E-05	-3.7	30011	00001	446
5934.26444	-9.	P36	9.880E-05	5.	9.739E-05	1.4	30011	00001	446
5935.67663	-12.	P35	1.120E-04	5.	1.101E-04	1.7	30011	00001	446
5937.07289	-13.	P34	1.280E-04	5.	1.239E-04	3.2	30011	00001	446
5938.45323	-9.	P33	1.390E-04	5.	1.386E-04	.3	30011	00001	446
5939.81753	-6.	P32	1.600E-04	5.	1.544E-04	3.5	30011	00001	446
5941.16576	-5.	P31	1.730E-04	5.	1.710E-04	1.1	30011	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)%	band		
			observed	s*	computed		upper	lower	mol
5942.49786	-7.	P30	1.920E-04	5.	1.885E-04	1.8	30011	00001	446
5943.81389	-4.	P29	2.090E-04	5.	2.067E-04	1.1	30011	00001	446
5945.11377	1.	P28	2.290E-04	5.	2.254E-04	1.6	30011	00001	446
5946.39748	8.	P27	2.460E-04	5.	2.444E-04	.6	30011	00001	446
5947.66486	5.	P26	2.670E-04	5.	2.636E-04	1.3	30011	00001	446
5948.91601	5.	P25	2.880E-04	5.	2.828E-04	1.8	30011	00001	446
5950.15096	13.	P24	3.070E-04	5.	3.015E-04	1.8	30011	00001	446
5951.36945	7.	P23	3.220E-04	5.	3.196E-04	.7	30011	00001	446
5952.57169	10.	P22	3.430E-04	5.	3.368E-04	1.8	30011	00001	446
5953.75754	11.	P21	3.600E-04	5.	3.527E-04	2.0	30011	00001	446
5954.92698	10.	P20	3.750E-04	5.	3.670E-04	2.1	30011	00001	446
5956.08002	9.	P19	3.790E-04	5.	3.793E-04	-.1	30011	00001	446
5957.21665	12.	P18	3.900E-04	5.	3.893E-04	.2	30011	00001	446
5958.33676	8.	P17	3.980E-04	5.	3.966E-04	.3	30011	00001	446
5959.44042	7.	P16	4.040E-04	5.	4.011E-04	.7	30011	00001	446
5960.52759	7.	P15	4.070E-04	5.	4.023E-04	1.1	30011	00001	446
5961.59821	3.	P14	4.030E-04	5.	4.001E-04	.7	30011	00001	446
5962.65233	3.	P13	4.000E-04	5.	3.942E-04	1.4	30011	00001	446
5963.68991	4.	P12	3.870E-04	5.	3.845E-04	.6	30011	00001	446
5964.71089	1.	P11	3.760E-04	5.	3.709E-04	1.3	30011	00001	446
5965.71530	0.	P10	3.570E-04	5.	3.534E-04	1.0	30011	00001	446
5967.67434	-1.	P 8	3.050E-04	5.	3.066E-04	-.5	30011	00001	446
5968.62889	-7.	P 7	2.760E-04	5.	2.776E-04	-.6	30011	00001	446
5969.56684	-9.	P 6	2.430E-04	5.	2.453E-04	-.9	30011	00001	446
5970.48816	-11.	P 5	2.090E-04	5.	2.098E-04	-.4	30011	00001	446
5971.39286	-9.	P 4	1.740E-04	5.	1.715E-04	1.4	30011	00001	446
5972.28090	-8.	P 3	1.300E-04	5.	1.309E-04	-.7	30011	00001	446
5973.15229	-6.	P 2	8.600E-05	5.	8.848E-05	-2.9	30011	00001	446
5974.00699	-6.	P 1	4.490E-05	5.	4.465E-05	.5	30011	00001	446
5975.66635	-6.	R 0	4.260E-05	5.	4.493E-05	-5.5	30011	00001	446
5976.47099	-8.	R 1	9.030E-05	5.	8.959E-05	.8	30011	00001	446
5977.25902	-2.	R 2	1.320E-04	5.	1.334E-04	-1.1	30011	00001	446
5978.03025	-8.	R 3	1.690E-04	5.	1.758E-04	-4.1	30011	00001	446
5978.78493	0.	R 4	2.160E-04	5.	2.164E-04	-.2	30011	00001	446
5979.52279	-6.	R 5	2.570E-04	5.	2.546E-04	.9	30011	00001	446
5980.24401	-7.	R 6	2.900E-04	5.	2.900E-04	.0	30011	00001	446
5980.94860	-3.	R 7	3.090E-04	5.	3.223E-04	-4.3	30011	00001	446
5982.30773	3.	R 9	3.770E-04	5.	3.761E-04	.2	30011	00001	446
5982.96226	4.	R10	3.960E-04	5.	3.973E-04	-.3	30011	00001	446
5983.60013	4.	R11	4.120E-04	5.	4.144E-04	-.6	30011	00001	446
5984.22135	6.	R12	4.290E-04	5.	4.275E-04	.3	30011	00001	446
5984.82589	4.	R13	4.350E-04	5.	4.366E-04	-.4	30011	00001	446
5985.41384	7.	R14	4.410E-04	5.	4.418E-04	-.2	30011	00001	446
5986.53985	11.	R16	4.380E-04	5.	4.410E-04	-.7	30011	00001	446
5987.07790	10.	R17	4.370E-04	5.	4.356E-04	.3	30011	00001	446
5987.59939	12.	R18	4.270E-04	5.	4.270E-04	.0	30011	00001	446
5988.59260	9.	R20	4.030E-04	5.	4.021E-04	.2	30011	00001	446
5989.06438	9.	R21	3.920E-04	5.	3.864E-04	1.4	30011	00001	446
5989.51961	6.	R22	3.740E-04	5.	3.691E-04	1.3	30011	00001	446
5989.95834	4.	R23	3.240E-04	10.	3.503E-04	-8.1	30011	00001	446
5990.38056	1.	R24	3.330E-04	5.	3.306E-04	.7	30011	00001	446
5991.17562	-2.	R26	2.890E-04	5.	2.894E-04	-.1	30011	00001	446
5991.54854	0.	R27	2.710E-04	5.	2.685E-04	.9	30011	00001	446
5991.90499	-4.	R28	2.510E-04	5.	2.478E-04	1.3	30011	00001	446
5992.24508	-6.	R29	2.300E-04	5.	2.275E-04	1.1	30011	00001	446
5992.56880	-10.	R30	2.090E-04	5.	2.077E-04	.6	30011	00001	446
5992.87625	-10.	R31	1.900E-04	5.	1.887E-04	.7	30011	00001	446
5993.44223	-14.	R33	1.570E-04	5.	1.533E-04	2.4	30011	00001	446
5993.70091	-11.	R34	1.400E-04	5.	1.372E-04	2.0	30011	00001	446
5993.94340	-8.	R35	1.260E-04	5.	1.221E-04	3.1	30011	00001	446
5994.16965	-12.	R36	1.120E-04	5.	1.082E-04	3.4	30011	00001	446
5994.37983	-12.	R37	9.660E-05	5.	9.535E-05	1.3	30011	00001	446
5995.19062	6.	R42	4.550E-05	5.	4.723E-05	-3.8	30011	00001	446
5995.40371	12.	R44	3.330E-05	5.	3.450E-05	-3.6	30011	00001	446
5995.59240	-2.	R53	6.700E-06	5.	6.689E-06	.2	30011	00001	446
6509.87098	-11.	P52	1.120E-05	5.	1.175E-05	-4.9	00031	00001	446
6515.47916	-4.	P49	2.090E-05	5.	2.061E-05	1.4	00031	00001	446
6517.30751	-7.	P48	2.450E-05	5.	2.464E-05	-.6	00031	00001	446
6519.11539	-7.	P47	3.010E-05	5.	2.932E-05	2.6	00031	00001	446

Table 5. continued

observed position	o-c	line	strength			(o-c)*	band		
			observed	s*	computed		upper	lower	mol
6522.66964	-4.	P45	4.120E-05	5.	4.095E-05	.6	00031	00001	446
6524.41593	-9.	P44	4.830E-05	5.	4.807E-05	.5	00031	00001	446
6529.53179	-3.	P41	7.570E-05	5.	7.564E-05	.1	00031	00001	446
6531.19601	0.	P40	8.790E-05	5.	8.717E-05	.8	00031	00001	446
6532.83965	1.	P39	1.060E-04	10.	9.998E-05	5.7	00031	00001	446
6534.46276	4.	P38	1.150E-04	5.	1.141E-04	.7	00031	00001	446
6536.06529	6.	P37	1.330E-04	5.	1.297E-04	2.5	00031	00001	446
6537.64725	8.	P36	1.540E-04	10.	1.466E-04	4.8	00031	00001	446
6539.20856	1.	P35	1.660E-04	5.	1.650E-04	.6	00031	00001	446
6540.74936	3.	P34	1.850E-04	5.	1.848E-04	.1	00031	00001	446
6542.26950	-4.	P33	2.070E-04	5.	2.059E-04	.5	00031	00001	446
6543.76911	-4.	P32	2.300E-04	5.	2.283E-04	.7	00031	00001	446
6545.24821	4.	P31	2.610E-04	5.	2.519E-04	3.5	00031	00001	446
6546.70666	8.	P30	2.900E-04	5.	2.765E-04	4.7	00031	00001	446
6548.14445	7.	P29	3.050E-04	5.	3.019E-04	1.0	00031	00001	446
6549.56161	3.	P28	3.260E-04	5.	3.279E-04	-.6	00031	00001	446
6550.95823	8.	P27	3.540E-04	5.	3.543E-04	-.1	00031	00001	446
6552.33409	-2.	P26	3.790E-04	5.	3.807E-04	-.4	00031	00001	446
6555.02412	-1.	P24	4.350E-04	5.	4.322E-04	.6	00031	00001	446
6556.33814	-4.	P23	4.540E-04	5.	4.566E-04	-.6	00031	00001	446
6557.63155	-3.	P22	4.800E-04	5.	4.795E-04	.1	00031	00001	446
6558.90432	-1.	P21	5.030E-04	5.	5.004E-04	.5	00031	00001	446
6560.15644	0.	P20	5.150E-04	5.	5.190E-04	-.8	00031	00001	446
6561.38787	-1.	P19	5.350E-04	5.	5.347E-04	.1	00031	00001	446
6562.59868	2.	P18	5.400E-04	5.	5.471E-04	-1.3	00031	00001	446
6563.78877	0.	P17	5.580E-04	5.	5.559E-04	.4	00031	00001	446
6564.95823	2.	P16	5.550E-04	5.	5.605E-04	-1.0	00031	00001	446
6566.10695	-1.	P15	5.570E-04	5.	5.606E-04	-.7	00031	00001	446
6567.23508	4.	P14	5.590E-04	5.	5.561E-04	.5	00031	00001	446
6568.34245	3.	P13	5.470E-04	5.	5.464E-04	.1	00031	00001	446
6569.42912	0.	P12	5.300E-04	5.	5.317E-04	-.3	00031	00001	446
6570.49509	-3.	P11	5.020E-04	5.	5.116E-04	-1.9	00031	00001	446
6571.54044	4.	P10	4.870E-04	5.	4.862E-04	.2	00031	00001	446
6572.56503	4.	P 9	4.510E-04	5.	4.556E-04	-1.0	00031	00001	446
6573.56891	5.	P 8	4.180E-04	5.	4.200E-04	-.5	00031	00001	446
6574.55209	7.	P 7	3.770E-04	5.	3.795E-04	-.7	00031	00001	446
6575.51447	1.	P 6	3.330E-04	5.	3.346E-04	-.5	00031	00001	446
6576.45612	-5.	P 5	2.830E-04	5.	2.856E-04	-.9	00031	00001	446
6577.37722	7.	P 4	2.330E-04	5.	2.331E-04	-.1	00031	00001	446
6578.27743	3.	P 3	1.750E-04	5.	1.777E-04	-1.5	00031	00001	446
6579.15684	-7.	P 2	1.170E-04	5.	1.198E-04	-2.4	00031	00001	446
6580.01553	-15.	P 1	6.010E-05	5.	6.039E-05	-.5	00031	00001	446
6581.67090	-7.	R 0	5.900E-05	5.	6.059E-05	-2.7	00031	00001	446
6582.46750	1.	R 1	1.190E-04	5.	1.206E-04	-1.4	00031	00001	446
6583.24321	-3.	R 2	1.760E-04	5.	1.794E-04	-2.0	00031	00001	446
6583.99815	-8.	R 3	2.300E-04	5.	2.362E-04	-2.7	00031	00001	446
6584.73245	-1.	R 4	2.850E-04	5.	2.904E-04	-1.9	00031	00001	446
6585.44587	-4.	R 5	3.500E-04	5.	3.413E-04	2.5	00031	00001	446
6586.13862	3.	R 6	3.920E-04	5.	3.885E-04	.9	00031	00001	446
6586.81051	2.	R 7	4.220E-04	5.	4.313E-04	-2.2	00031	00001	446
6587.46156	-4.	R 8	4.830E-04	5.	4.695E-04	2.8	00031	00001	446
6588.09190	-4.	R 9	5.000E-04	5.	5.027E-04	-.5	00031	00001	446
6588.70139	-8.	R10	5.250E-04	5.	5.306E-04	-1.1	00031	00001	446
6589.29025	4.	R11	5.580E-04	5.	5.533E-04	.8	00031	00001	446
6589.85817	2.	R12	5.700E-04	5.	5.706E-04	-.1	00031	00001	446
6590.40530	1.	R13	5.830E-04	5.	5.825E-04	.1	00031	00001	446
6590.93158	-5.	R14	5.750E-04	5.	5.893E-04	-2.5	00031	00001	446
6591.43715	0.	R15	5.950E-04	5.	5.911E-04	.7	00031	00001	446
6591.92187	0.	R16	5.730E-04	5.	5.881E-04	-2.6	00031	00001	446
6592.38574	-1.	R17	5.800E-04	5.	5.808E-04	-.1	00031	00001	446
6592.82883	0.	R18	5.720E-04	5.	5.695E-04	.4	00031	00001	446
6593.25106	-2.	R19	5.500E-04	5.	5.546E-04	-.8	00031	00001	446
6593.65253	3.	R20	5.400E-04	5.	5.366E-04	.6	00031	00001	446
6594.03309	0.	R21	5.250E-04	5.	5.158E-04	1.7	00031	00001	446
6594.39281	-4.	R22	5.030E-04	5.	4.928E-04	2.0	00031	00001	446
6594.55700	-1.	R55	6.180E-06	5.	6.288E-06	-1.8	00031	00001	446
6594.73183	6.	R23	4.700E-04	5.	4.681E-04	.4	00031	00001	446
6595.04988	3.	R24	4.390E-04	5.	4.420E-04	-.7	00031	00001	446
6595.34710	3.	R25	4.100E-04	5.	4.150E-04	-1.2	00031	00001	446

Table 5. continued

observed position	o-c	line	observed	s _t	computed	(o-c)%	band upper	lower	mol
6595.62346	0.	R26	3.850E-04	5.	3.875E-04	-.6	00031	00001	446
6595.87903	4.	R27	3.530E-04	5.	3.598E-04	-1.9	00031	00001	446
6595.99484	3.	R50	1.690E-05	5.	1.686E-05	.2	00031	00001	446
6596.11365	-3.	R28	3.290E-04	5.	3.324E-04	-1.0	00031	00001	446
6596.32755	5.	R29	3.150E-04	5.	3.054E-04	3.0	00031	00001	446
6596.52055	9.	R30	2.900E-04	5.	2.792E-04	3.7	00031	00001	446
6596.60638	-14.	R47	2.920E-05	5.	2.889E-05	1.1	00031	00001	446
6596.69263	6.	R31	2.680E-04	5.	2.539E-04	5.3	00031	00001	446
6596.76875	15.	R46	3.330E-05	5.	3.426E-05	-2.9	00031	00001	446
6596.84381	1.	R32	2.480E-04	5.	2.298E-04	7.4	00031	00001	446
6596.90964	-13.	R45	4.000E-05	5.	4.045E-05	-1.1	00031	00001	446
6596.97424	7.	R33	2.160E-04	5.	2.069E-04	4.2	00031	00001	446
6597.02998	-7.	R44	4.700E-05	5.	4.754E-05	-1.2	00031	00001	446
6597.08365	-1.	R34	1.920E-04	5.	1.854E-04	3.5	00031	00001	446
6597.17226	-3.	R35	1.680E-04	5.	1.653E-04	1.6	00031	00001	446
6597.20791	1.	R42	6.350E-05	5.	6.478E-05	-2.0	00031	00001	446
6597.26555	8.	R41	7.650E-05	5.	7.510E-05	1.8	00031	00001	446
7742.16981	-6.	P33	2.710E-05	5.	2.814E-05	-3.8	10031	00001	446
7743.78473	-11.	P32	2.980E-05	5.	3.130E-05	-5.0	10031	00001	446
7750.00295	-4.	P28	4.640E-05	5.	4.550E-05	1.9	10031	00001	446
7752.96678	-11.	P26	5.200E-05	5.	5.311E-05	-2.1	10031	00001	446
7758.60384	-15.	P22	7.170E-05	5.	6.754E-05	5.8	10031	00001	446
7759.95271	6.	P21	7.680E-05	5.	7.064E-05	8.0	10031	00001	446
7762.57714	-5.	P19	7.510E-05	5.	7.579E-05	-.9	10031	00001	446
7766.33194	-1.	P16	7.620E-05	5.	7.986E-05	-4.8	10031	00001	446
7767.53506	11.	P15	7.860E-05	5.	8.001E-05	-1.8	10031	00001	446
7774.24253	-6.	P 9	6.500E-05	5.	6.550E-05	-.8	10031	00001	446
7775.27534	-6.	P 8	5.990E-05	5.	6.043E-05	-.9	10031	00001	446
7776.28385	-4.	P 7	5.390E-05	5.	5.465E-05	-1.4	10031	00001	446
7784.26438	-10.	R 1	1.770E-05	5.	1.742E-05	1.6	10031	00001	446
7789.70079	0.	R 9	6.670E-05	5.	7.224E-05	-8.3	10031	00001	446
7790.81572	-14.	R11	8.250E-05	5.	7.935E-05	3.8	10031	00001	446
7791.83323	-5.	R13	8.420E-05	5.	8.333E-05	1.0	10031	00001	446
7792.30536	-1.	R14	8.400E-05	5.	8.418E-05	-.2	10031	00001	446
7793.57511	5.	R17	8.608E-05	5.	8.257E-05	4.1	10031	00001	446
7794.29944	4.	R19	8.020E-05	5.	7.855E-05	2.1	10031	00001	446
7794.62481	-10.	R20	7.610E-05	5.	7.584E-05	.3	10031	00001	446
7795.20264	0.	R22	7.470E-05	5.	6.936E-05	7.2	10031	00001	446

o-c are the observed minus the computed frequencies in $\text{cm}^{-1} \times 10^5$.

s_t are the estimated uncertainties in the measured line strengths in percent.

(o-c)% are the observed minus computed line strengths in percent:

$$(o-c)\% = \{[S(\text{obs.}) - S(\text{comp.})]/S(\text{obs.})\} \times 100$$





















